

# COMPUTERWORLD

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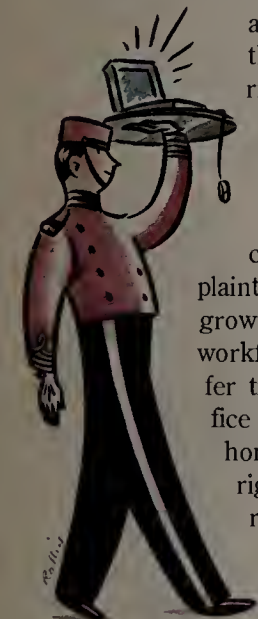
## High tech checks in to hotel rooms

By Mindy Blodgett and Kim Girard

Telephones without data ports. Desks situated far from phone jacks. "Dirty" phone lines that lead to dropped connections from laptops. These are all signs of an ill-equipped

hotel room and are the bane of the road warrior's existence.

But the hotel industry is starting to listen to the chorus of complaints from the growing mobile workforce. Some offer travelers an office away from the home office — right in their rooms.



ROLLIN MCGRAIL

It's about time, said Chuck Rush, global network architect at McDonald's Corp. in Oak Brook, Ill. Rush is on the road about half his working life.

He carries the following arsenal: two cellular phones, a pager, an NEC Corp. laptop, a Hewlett-Packard Co. OmniBook and a color printer. He needs the equipment, which he estimates weighs around 30 pounds, for electronic-mail access and business presentations. He also travels with a

*Hotels, page 99*

## Microsoft trips on Web

### User complaints mar Explorer 3.0 ship

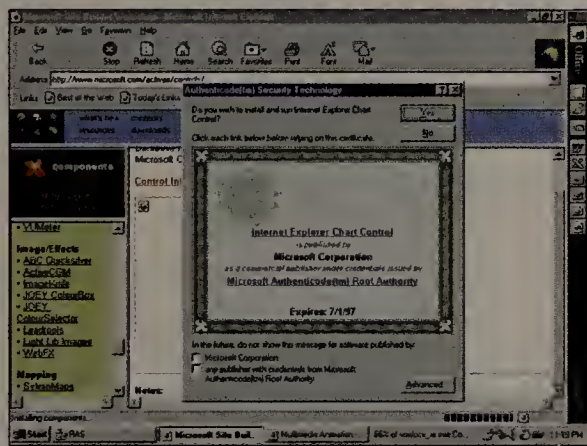
By Kim S. Nash

Basic problems with Microsoft Corp.'s new Web browser — which involve installation, access to World Wide Web sites and unexplained freezes — have frustrated many early users, according to those interviewed

by *Computerworld* and hundreds of messages posted in online forums.

Ironically, Microsoft's Internet Explorer 3.0 matches or surpasses most of the features in Netscape Communications Corp.'s rival product, Navigator 3.0, said users and analysts who have tested prerelease versions of both packages (see review, page 60).

But many users who downloaded the final version of Explorer 3.0 last week didn't get a chance to find out. Their diffi-



**Complaints aside, Microsoft's Internet Explorer 3.0 is expected to give Netscape a run for its money**

### Security gap uncovered in ActiveX components

By Frank Hayes and Sharon Gaudin

Amid concerns about the dangers of hostile Java applets on the World Wide Web, Internet users could face a new problem: hostile ActiveX Web components.

Microsoft Corp. last week acknowledged that it is scrambling to tighten security for its ActiveX components. This is in response to a developer who has been demonstrating an ActiveX component that can shut down a computer if it is downloaded from the Web with Microsoft's new Internet Explorer 3.0 browser.

Explorer has problems of its own (see related story at left).

"People are not prepared for this," said David Kelly, an analyst at Hurwitz Group, Inc. in Newton,



### Cowabunga! Safe surfing tips

- Regularly back up system
- Watch what is downloaded over the 'net
- Set up a procedure for testing components
- Look for digital signatures to track where components come from

Source: Hurwitz Group, Inc., Newton, Mass.

Mass. "We're just beginning to see the potential mischief that [ActiveX components] can cause."

The unfriendly component, *ActiveX, page 16*

## Dawn of net device era?

By Sharon Gaudin

NEW YORK

The keynote address at last week's DCI Data Warehouse World here threw fuel on an already fiery debate concerning the growth of the emerging class of so-called network computers in a PC-dominated industry.

The data warehouse industry's move to the Internet will push the network comput-

er into popularity and onto desktops nationwide in three years, according to Richard Finkelstein, a high-profile database analyst and consultant.

"It's the time of the network computer. I'm talking about putting access everywhere. There's no Windows training needed, and you don't have to worry about all that software on every desktop," said Finkelstein, who tackles the related issue of In-

*Net devices, page 14*

By Patrick Dryden

Two selective outsourcing options launched last week can help harried network administrators unload management tasks they might put off in the never-ending scramble to keep traffic flowing.

Information technology organizations frequently bemoan the rapid pace of network evolution because they lack the time and budget to train or hire experts — or can't keep them on staff.

In selective outsourcing, only some pieces of an information systems operation are outsourced.

EnterprisePro from International Network Services, Inc. analyzes the performance of complex networks to provide real-time decision support and history via an intranet. ProWatch Secure from NetSolve, Inc. builds a firewall to limit Internet

*Outsourcing, page 12*

More than 85% of computer break-ins go undetected, the FBI's Computer Crime Squad says.

## Outsource services ease net security, analysis burdens

News paper

## Gratitude? HAH!

You bend over backward to keep users happy, and what's your reward? Budget cuts, downsizing and a fresh set of demands. What's an IS manager to do?

See Managing, page 69.





## Up Front

## Listen up

**T**he opening line of a book called *The Lost Art of Listening* asks if the person you're talking to is *really* listening. Some misguided manager no doubt recommended I read this book — I probably wasn't listening at the time — in the faint hope that I'd shut up now and then. His futile wishes aside, I have noticed a lot of listening going on in the computer industry these days.

Look at how Microsoft is having to listen to users evaluate and complain about its Internet Explorer 3.0 browser or point out security flaws in its ActiveX object technology (see stories, page 1).

And check out the way network outsourceurs are listening to customers and producing new services in Patrick Dryden's story, also on our front page. Increasingly, companies can pick and choose what network tasks they hand over to outsiders.

Then consider the way hotels are suddenly listening to the clamor for more computer-friendly rooms for road warriors. How many of us have wrenched headboards off walls, crawled under beds to find that telephone outlet thing or struggled to keep our patience while explaining to a hotel "engineer" named Clem that the problem isn't the light fixture?

As Mindy Blodgett's page 1 story points out, the rivalry among hotels to secure our loyal patronage is leading to amenities such as fax machines in every room, two-line speaker phones, separate ISDN modem lines, Internet connections and T1-line access in hotel suites.

But before we start packing our laptops with a song in our hearts, we should realize a lot of Clems are still wandering those color-coordinated hallways, fixing the ice machines.

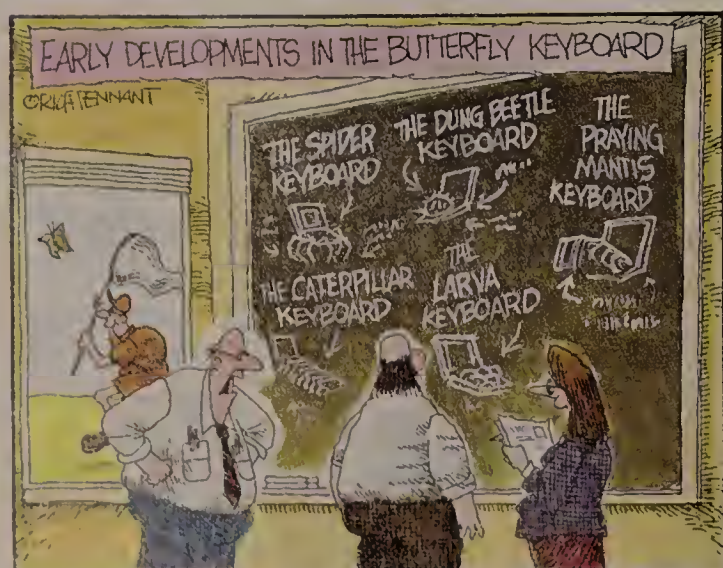
Finally, listening skills also play a part in Laura DiDio's Ms. MIS column (page 72) about working mothers and their "Don't ask, don't tell" policies for concealing family responsibilities. In this case, IS executives may be listening for the wrong things, making their female employees wary of discussing their home lives for fear of seeming unprofessional.

"Better to be thought of as an uncomplaining Superwoman," Laura writes, "than to raise the specter of needing special treatment to juggle dual roles as an IS professional and full-time mom." Are these managers really listening?

Now where did I put that book ...?

Maryfran Johnson, Executive editor  
Internet: maryfran\_johnson@cw.com

## The 5th Wave by Rich Tennant



## Powersoft unveils Web tools

By Frank Hayes

Powersoft Corp. this week plans to unveil a family of tools for developing Internet applications.

The first of the tools, code-named Charlotte, is a visual environment for assembling World Wide Web-based applications from existing components. It will enter beta testing this fall.

"At this point, it's not a simple or even doable task to build full-function applications that can be accessed by a Web browser," said

Larry Gezelius, a systems analyst at the Pierce County information systems department in Tacoma, Wash. "We want anything that makes it easier for us to deploy those applications."

The Charlotte tool set will let developers build Web pages that incorporate Java applets, Microsoft Corp.'s ActiveX components and Web-page development tools, said David Litwack, president of the Sybase, Inc. subsidiary in Concord, Mass. It will also

let them build server applications using C++, PowerBuilder and other tools, he said.

## Internet

Litwack wouldn't comment on pricing and availability for the tools, which will be announced at Powersoft's user conference in Orlando, Fla.

But he said the tools are independent of Powersoft's plans to add Web-page generation capability to PowerBuilder 5.0, the company's popular visual development system.

## News Shorts

## Netscape wins Chrysler contract

Netscape Communications Corp. this week signed a mega-deal with Chrysler Corp. to provide the automaker with servers and browsers for its corporate intranet and other applications. The deal includes more than 6,000 licensed copies of Netscape SuiteSpot server software and an enterprisewide license for Netscape Navigator browser software.

## Cisco profits double

Cisco Systems, Inc.'s buying spree hasn't dented its profits. The San Jose, Calif., networking equipment maker posted earnings of \$913.3 million for its fiscal year ended July 28, double the \$456.5 million it made in fiscal 1995. Cisco's sales for the year were \$4 billion, up 83% from last year.

## Oracle preps new tools

Oracle Corp. plans next week to launch a set of data warehousing tools for use with SAP AG's R/3 applications software. Oracle will roll out "kits for consultants" that work with SAP applications and Oracle databases, said Polly Sumner, vice president of worldwide business alliances at Oracle.

## Bay extends Fast Ethernet line

In a move designed to extend the reach of Fast Ethernet beyond the high end of its user base, Bay Networks, Inc. last week announced modules that will let its lower-end System 3000 hubs sup-

port the 100M bit/sec. switching technology. The modules will let the estimated 175,000 installed System 3000 hubs support a mix of shared-media networking and switching technologies. The Fast Ethernet host modules cost \$1,995 to \$2,495 and are available now.

## HP speeds network probes

Hewlett-Packard Co. this week will introduce two Remote Monitoring probes to help track network performance. Both RISC-based units can aggregate statistics on heavily used Token Ring or switched Ethernet segments and reduce traffic before reporting to HP's NetMetrix analyzer. The four-port Ethernet LanProbe is expected to ship next month. It will cost \$5,995. The Token Ring model also is expected to ship next month and will cost \$3,035.

## Solving dual-net woes

To help manage combined SNA and TCP/IP networks, Sterling Software, Inc. this week will launch an MVS-based tool for monitoring both connections. Solve:Netmaster for TCP/IP correlates sessions with network addresses, simplifies logging and combines normally separate functions from multiple domains into one console. It costs \$9,000 per processor.

## IBM is all SET

IBM recently concluded a deal to provide Secure Electronic Transaction (SET) technology to Novus Services to enable secure credit-card transactions over the Internet. SET is a specification that was developed by MasterCard, Visa International, Inc., Netscape, IBM and others. It

uses encryption technology to prevent hackers from intercepting transmissions. Novus, a business unit of Dean Witter, Discover & Co.,

issues Discover, Bravo and Private Issue credit cards. The companies are scheduled to announce the deal later this month.

## Novell offers upgrades

Novell, Inc. recently kicked off a series of free upgrade promotions for its upcoming Green River NetWare 4.11 release and its GroupWise 5.0 software. Users who buy current versions of either product can receive free upgrades for up to 60 days after the new versions ship. Both software packages are in final beta testing. The new products are expected to ship next month.

**SHORT TAKES** Lotus Development Corp. last week began to ship Lotus Components, a \$49 package of ActiveX software modules for Notes that includes a spreadsheet, charting tool, file viewer and project scheduler... Avantel, a joint venture of MCI Communications Corp. and Grupo Financiero Banamex-Accival, has become the first company to offer long-distance service in Mexico's newly deregulated telecommunications market. ... HP last week blamed its recent exit from the disk-drive business and operating losses for weaker-than-expected profits of \$425 million on revenue of \$9.1 billion for its quarter ended July 31.... Softbank Corp. in Japan has acquired an 80% equity stake in memory manufacturer Kingston Technology Corp. under a \$1.5 billion deal.





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## News

### NEWS

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## COME VISIT OUR WEB SITE



### Breaking news

#### QuickPoll: Windows 95

One of the most hyped products this decade turns 1. Is it a happy birthday? Take our QuickPoll.  
[www.computerworld.com](http://www.computerworld.com)

#### Ms. MIS: Mom's the word

Is the mommy track dangerous for your career? Join Laura DiDio and your peers online.

[www.computerworld.com/forums/](http://www.computerworld.com/forums/)

#### Forum: Internet Explorer 3.0

Spout on its strengths and whomp its weaknesses in a forum led by consultant and *Computerworld* reviewer Garrett N. Ray

[www.computerworld.com/forums/](http://www.computerworld.com/forums/)

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## Choice Cuts

# The Practical Guide to

# JavaScript

Free tools that spiff up intranets and Web pages  
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They're finally here: executives who fuse business and IS know-how into a powerful combination. We profile three in *Computerworld's* Leadership Series. Follows page 32



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Electronic banking hasn't spurred the aggressive branch consolidations initially predicted. In fact, there are more bank branches than ever.



Industry pundit **David Coursey** debuts as a regular *Computerworld* columnist on **page 101**. Coursey is

editor and publisher of the newsletter "coursey.com" and host of the Showcase 97 conference. He was recently named one of the most influential computer industry journalists by *Marketing Computers* magazine, which also named him top newsletter editor.

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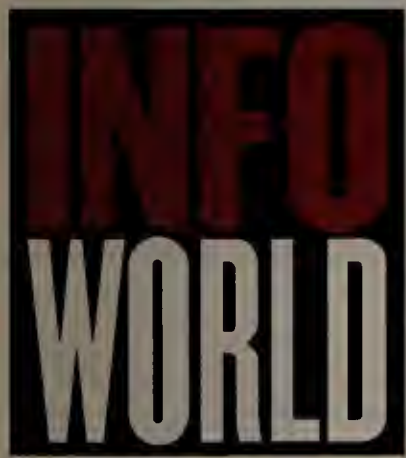
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# Developer/2000™ Scores Highest in InfoWorld Product Comparison

The rigorous InfoWorld Product Comparison recently tested Oracle Developer/2000 and Microsoft Visual Basic to find which one “wouldn’t crack under the pressure of scaling to the enterprise.” After a battery of tests, InfoWorld concluded: “Our standout winner, Oracle Developer/2000...”



## InfoWorld Product Comparison Score Enterprise Development Tools

### Oracle Developer/2000



### Microsoft Visual Basic



#### InfoWorld on Scalability

“Developer/2000 performance... convinced us that it was prepared to scale...”

“...Visual Basic just didn’t have... scalability.”

#### InfoWorld on Team Development

“Developer/2000 leads the pack in data-repository-based development.”

“We feel this is an area where Visual Basic needs work.”

#### InfoWorld on Database Programming

“Developer/2000 is packed with tools that make it the strongest... in transaction building.”

“Visual Basic... transaction-building capabilities weren’t ready for enterprise-wide applications.”

#### InfoWorld on Reusability

“We were quite impressed with the wide range of object-reusability tools offered by Developer/2000.”

“...Visual Basic’s object reusability features (are) inefficient and tedious.”

#### InfoWorld on Productivity

“... Developer/2000 is packed... for productivity. Developer/2000’s most notable tool... is its unique drag-and-drop application partitioning capability.”

“...Visual Basic... lacked the perks provided by Developer/2000.”

For more information and a copy of the report, call Oracle at 1-800-633-1071, ext. 10051 or find us on the Web at <http://www.oracle.com>

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# 'net snares mainstream

Poll finds masses are pushing early, technical users aside

By Justin Hibbard

The Internet isn't just for geeks anymore.

That was the overall conclusion of Nielsen Media Research's latest study of Internet demographics, released last week.

The study found that the number of North Americans with Internet access jumped from 37 million last August to 55.5 million six months later and that newcomers to the 'net are more likely to resemble the mainstream population. The study also revealed that last August, 10.4% of respondents had used the Internet within the preceding three months, whereas in March 1996, 17.2% had used the Internet within the preceding six months.

People who gained Internet access between last August and this past March tended to be older, less affluent, less educated and less technically proficient than early adopters.

In other words, the Internet is no longer dominated by highly

technical users but is being accessed by the masses, said Asim Abdullah, executive director of CommerceNet, a consortium of companies that commissioned the study from Nielsen.

That's good news for companies that want to transact business over the Internet. But the survey results shouldn't prompt companies to adopt a mass-market approach, said Randy Hancock, director of Gemini Consulting C4 Lab in Cambridge, Mass.

## Custom opportunities

Rather, companies should take advantage of the increased opportunities for narrowcasting, or tailoring the message to users' individual preferences.

"As the market expands to become more representative of the population as a whole, that means there will be a lot of different segments that all have different needs," Hancock said.

Michael Tchong, editor and

publisher of "CyberAtlas," an online newsletter in San Francisco, said the rising tide of Internet users will raise specialized sites to a new level.

"Once you have this type of growth, even the narrower interests start to gain momentum and get larger audiences to the point where they can get advertising or justify what they're doing to management," he said.

But the technology for narrowcasting is "still very much in evolution," Hancock said.

Most companies that narrowcast rely on cumbersome techniques to track customers' usage patterns and then create dynamically generated Hypertext Markup Language pages based on the findings, he said.

But for some companies, simply running a Web site is demanding enough without thinking about demographics. "We aren't doing much with narrowcasting right now," said John Petrone, vice

## Internet demographics

### 'net demographics

■ Longtime Internet users ■ Internet newcomers

Consider themselves computer professionals

23%  
11%

Are men

67%  
60%

Have used a computer for five or more years

70%  
59%

Own a home computer

88%  
72%

Have a college degree

56%  
39%

Have household income of at least \$80,000

27%  
17%

Source: Nielsen Media Research, New York

president of information systems at Preview Vacations, Inc. in San Francisco. "It can be strenuous enough just sending electronic mail out to thousands of people."

The staff at Raychem Corp. in San Francisco uses a novel technique for differentiating its Web pages: Every page is owned by an

individual, said Mussa Khair, systems and network administrator at the company.

An employee in each department maintains a page that details the department's products, Khair explained. Users who find the page they want can get in-depth information on a narrow topic.

# Games telecommuters return to cars

Some call experiment a success, but lasting effect uncertain

By Mindy Blodgett

Atlanta's Olympic telecommuting experiment was a great success for Diane Witter, an editor at Newsletters Plus, a publishing and marketing company.

"It was so much less stressful," said Witter, who noted that she was able to skip a 40-minute to one-hour commute to work. "We're still assessing how it went, but I think we're going to incorporate telecommuting more into our corporate lifestyle here."

But Bruce Hacker, first vice president of planning administration at Sun Trust Service Corp. in Atlanta, said he has doubts about the lasting effects of the experiment. One hundred and twenty employees of the banking concern telecommuted during the more than two-week period of the Olympic Games.

"It went well, and many said they worked more effectively at home," Hacker said. "We're doing a survey now, and we're looking

at productivity. But we had few telecommuters before the Games, and I'm not sure if that will change."

Witter and Hacker illustrate the mixed reaction to the telecommuting explosion created in At-

lanta by the short-term emergency of the Olympics. Although many companies added telephone lines and bought modems, notebooks and software to accommodate the increase of thousands of telework-

ers, industry observers said it is unclear if a trend has started.

Atlanta officials said it is too soon to quantify the success of the telecommuting experiment by measuring how many companies participated and how many cars were kept off the road. But Michael Dziak, a telecommuting analyst and co-founder of the Metro Atlanta Telecommuting Advisory Council, said his goal was to get 20,000 workers at 200 companies to institute comprehensive policies by January of this year. By April, only about two dozen companies had done so.

But light traffic during the Games suggests that many workers either worked at home, volunteered at the Games or took vacations, Dziak said. "The traffic was really light during the Olympics," Hacker said.

Yet a week after the Olympics, press reports said most Atlantans seemed to be back in their cars commuting to work.

"I think the Olympics, like one-

time disasters like earthquakes, show that these events can only be short-term catalysts," said Gil Gordon, a telecommuting analyst at Gil Gordon Associates, Inc. in Monmouth Junction, N.J. "It was a great opportunity to promote telecommuting, and that happened, but many employers are reluctant to change."

Dziak was more optimistic about the experiment. He said he

is working on quantifying results now but said "people who were skeptics were probably convinced that it can work."

Hacker conceded that his company may not alter its telecommuting policies in the near future. But "as hiring situations get more critical and competitive, we may change because workers nowadays expect benefits like telecommuting," he said.



Advisor Michael Dziak says the Olympic Games probably proved to skeptics that telecommuting can work

## Get good hardware, and plan

Telecommuters said that although months of planning resulted in only a few headaches, they learned some lessons from their Games experience, including the following:

- Sun Trust's Bruce Hacker said it is important that workers have beepers and mobile phones. "We had to be able to reach them at any time," he said. He also said it is important to maintain regular contact with teleworkers.
- Consider getting an Integrated Services Digital Network telephone line or at least two phone lines to the home. "I really needed more bandwidth," said Gary Troutman,

corporate developer at the Advanced Technology Development Center at the Georgia Institute of Technology.

- It is important to have good equipment in the home office, such as quality desktops. Some users said fax capability is important. Newsletters Plus' Diane Witter said she had to replace her older Apple Computer, Inc. Macintosh computer in the middle of the Games because it died. And because she badly needed a fax machine, she bought a new Macintosh that came with one.
- Don't wait until the last minute to plan. "Everything has to work like a top," Troutman said.

— Mindy Blodgett



# Upcoming monitor tracks routers, switches

Concord Communications' tool delivers summaries, reports over intranets

By Patrick Dryden

A new performance analysis tool coming next month from Concord Communications, Inc. promises help in monitoring the routers and switches at the heart of complex networks, according to beta testers.

Users of Concord's Network Health tools for LANs, WANs and frame-relay connections said the upcoming Router/Switch package provides the kind of clear, complete reports they need to detect problems before they cause outages.



Mercer's Patrick Brennen needs help dealing with router contention

Managers who write their own tools to gather utilization statistics said they prefer Concord's simple, graphical interface and Web-accessible reports. Others praised the wealth of performance information in Network Health reports,

which surpass rival Remote Monitoring (Rmon) software and vendor-specific tools.

Network Health-Router/Switch delivers summaries and exception reports via console, printout or intranet — a hot capability.

"I fire up my browser at home when I get up in the morning to check Network Health reports before I get to work," said David Brown, director of network services at *The New York Times*. "With all this trending data, I can see right away if something is out of whack with the routers."

Network Health's "canned queries and automatic reporting save us a lot of time," Brown said. He said his staff can "call up a Web-based utilization report on the fly while talking to customers on the phone to pinpoint problems."

## Streamlined analysis

Two Network Health users — Arizona State University in Tempe and Chevron Information Technology Co. in San Ramon, Calif. — are eager to replace homegrown tools that currently poll routers and switches for utilization statistics.

"With a limited staff to support management tools, we can let Network Health do its own thing, reliably presenting the trend analysis we need to identify potential problem areas," said Darrell Epps, IT communications engineer at Chevron.

The tool helps managers deal with ongoing router quirks and pending upgrades, said Joe Askins, director of data communications at Arizona State.

"Now we get a complete set of performance reports showing not only all circuits being serviced but statistics from the guts of the router," Askins said.

Patrick Brennen, network operations manager at Mercer Management Consulting, Inc., said he likes the tool's help in

dealing with contention issues on routers throughout 15 sites of the New York-based financial firm.

"More information is better. Now we can examine why one particular router is slow-

er than the rest, detecting problems with ports and firmware or verifying that it's just very busy," Brennen said.

Network Health-Router/Switch will preview at Network/Interop next month and

should ship before October. It runs on Unix workstations from Hewlett-Packard Co. or Sun Microsystems, Inc. and costs \$9,995.

**& New products** poll and diagram networks. See page 53.

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# Incentive programs attract few converts

By Bob Wallace

When vendors launch highly publicized incentive programs to lure users away from rivals, they are mainly wasting their time, according to users and industry analysts who are wary of the marketing hype.

So users greeted UB Networks, Inc.'s new incentive program with a big yawn. The program was announced last week as a way to attract its rivals' hub customers to UB's high-end switching hubs.

Networking vendors Cabletron Systems, Inc. and Ascom Timeplex, Inc. also launched incentive programs amid much fanfare. Their announcements were made a year ago this month.

## Made millions

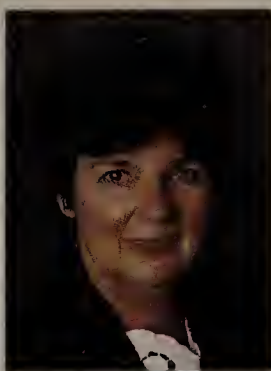
The Cabletron Advantage Program offered 3Com Corp. and Chipcom Corp. customers thousands of dollars worth of product

buybacks and promotional offers [CW, Aug. 14, 1995].

"We made millions of dollars on the program," said Michael Welts, director of worldwide marketing at Cabletron. He said the campaign was far cheaper than what it would have cost Cabletron to buy Chipcom.

One user contact provided by Cabletron said his company replaced some Chipcom gear at one site but had already decided to standardize on Cabletron gear years before the program was launched.

The incentive effort played no role in his decision, said the network manager, who requested anonymity.



Emory University's Barbara Maaskart: 'We make decisions on more important criteria such as the quality and capabilities of the products'

Some Chipcom users slammed the Cabletron program, as well.

"It'd require a tremendous amount of time, effort, training and turmoil to change vendors, so it'd make no sense to go through all that just to take advantage of a marketing program," said Glenn Loud, a senior electrical technician at the University of Massachu-

setts in Amherst, a Chipcom customer. "We, like most users, want to keep a stable network environment. I'm wary of these hyped-up [incentive] programs," Loud said.

Another user agreed.

"We wouldn't switch even if the equipment was free," said Rob

McKenna, telecommunications manager at Sumitomo Bank Ltd. in New York, which has spent more than \$1 million on Chipcom equipment. "The program was pretty ridiculous since savvy users couldn't be expected to make a major vendor and network change just because of some incentives. We didn't even consider it."

Ascom Timeplex's program, also launched last August, was partly targeted at customers of StrataCom, Inc., Network Equipment Technologies, Inc., Newbridge Networks, Inc. and others. Ascom Timeplex decided to offer users the value they carry on their books for the equipment.

## Nowhere to go

The special deal didn't stop U.S. Cellular Corp. from leaving Ascom Timeplex in favor of StrataCom for a \$5 million to \$10 million network upgrade project.

"We look for upgradability and scalability in switching products because we're constantly growing," explained Steve Clark, director of network services at U.S. Cellular in Chicago. "With Ascom Timeplex, we had nowhere to go. We're replacing their switches with StrataCom's for an [Asynchronous Transfer Mode] backbone."

Clark said he considers incentive programs but is more interested in products that can be easily expanded.

Other users say many factors rank higher than incentive programs.

"Although these programs seem attractive, we make decisions on more important criteria such as the quality and capabilities of the products," said Barbara Maaskart, director of information services at Emory University's Rollins School of Public Health in Atlanta.

# Novell offers MHS users upgrade path to GroupWise 5

By Tim Ouellette

When Novell, Inc. throws its coming-out party next month for the GroupWise upgrade, included on the guest list will be users still running electronic mail based on the company's aging Message Handling Service (MHS).

To sweeten the invite, the Orem, Utah, company last week announced that MHS users could get up to 30% off the price of an upgrade to the current GroupWise 4.1 system. From there, they can receive free upgrades to the latest revision of the product, GroupWise 5, an integrated E-mail and groupware system slated for delivery Sept. 12.

However enticing the financial incentives up front, it could cost users on the back end. That's because GroupWise 5 uses an infrastructure that is completely different from MHS. Hence, users said, it would take strong migration tools, along with gateways back to MHS, to persuade them to move to GroupWise.

Garnering MHS user interest in GroupWise is important because despite the fact that Novell has long abandoned further development for MHS, there are still about 4 million users running E-mail products based on the Net-

Ware message transport, according to Gartner Group, Inc. in Stamford, Conn. And those users are also considering products from competitors Microsoft Corp. and Lotus Development Corp. as an option (see chart).

"[MHS] has been good to us, but we do know that MHS is a dead end, and we will need to move," said Darwin Collins, a network administrator at Dallas Area Rapid Transit (DART), who has 1,200 users running Office Logic, an MHS E-mail product from LAN-ACES, Inc.

Because DART has numerous applications written to transfer batch jobs between DART's mainframe and MHS E-mail and fax software, "we would have to keep MHS running, and a gateway on the GroupWise side better work," Collins said.

GroupWise product manager Eldon Greenwood said the product will include a gateway to MHS that also offers directory synchronization and some administration features. But one MHS user beginning the move to GroupWise 4.1 said the migration tools aren't foolproof yet.

"If you expect to migrate seamlessly, there are some things that you will run into that will cause problems," even though the sys-

tem won't necessarily crash, said Derek Charleston, a network consultant at Akzo Nobel, Inc., a Dutch chemical company with U.S. offices in Chicago.

Because of those issues and the fact that MHS has long performed reliably for basic E-mail, MHS users may hang tough.

"I was surprised to see as few [MHS] users thinking about moving to GroupWise as I did," said Joyce Graf, an analyst at Gartner in Burlington, Mass. "MHS will still have a long lifetime with some of these shops."

# Cisco to rev high-end routers

By Bob Wallace

Cisco Systems, Inc. is prepping major enhancements that will increase tenfold the data compression capabilities of its flagship 7500 routers and add sorely needed encryption capabilities, sources told *Computerworld*.

Sources said users would likely have to add a small module to the router to gain the data compression boost from roughly the 1M to 2M byte/sec. range to as much as 10M to 20M byte/sec. Cisco cus-

tomers could transmit large data files faster and thus reduce wide-area network charges.

Cisco's current compression capabilities are supported via its Internetwork Operating System (IOS), router software that is akin to a PC operating system. The router market leader releases two software upgrades per year.

IOS 11.2, due next month, will include support for data encryption for the 7500, sources said.

Users under software maintenance agreements typically get

the upgrade free, but Cisco may assess a feature-license fee, sources said.

One user expressed interest.

"I'm looking at upgrading from my 7000 routers to the 7500s, so anything that helps enrich my network is very welcome," said Bill Horst, chief at the General Services Administration's communications branch in Philadelphia.

Cisco officials confirmed the broad outlines of the router enhancements but wouldn't provide details.

## What to do?

Novell no longer supports new MHS development. Here are some options for MHS E-mail:

Take advantage of Novell's deals to upgrade to GroupWise 5

Get a discount from Infinite Technologies in Owings Mills, Md., and upgrade to Connect2, an MHS clone software that offers more features than Novell's MHS

Install Lotus Notes with Lotus' MHS gateway

Scrap everything and install a new system such as Microsoft Exchange

Stay with MHS products from companies such as On Technology, but expect only basic E-mail services and few, if any, feature upgrades

Still, Collins said users are saying they want to add document management and workflow. That

can only be done by upgrading to GroupWise 5, which tightly integrates these features.



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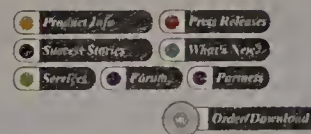
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# DEC to launch upgrade of Intel-based PCs

By Jaikumar Vijayan

Digital Equipment Corp. is readying a September refresh of its entire Intel Corp.-based line of desktops, laptops and PC servers in an effort to put its PC business back on track.

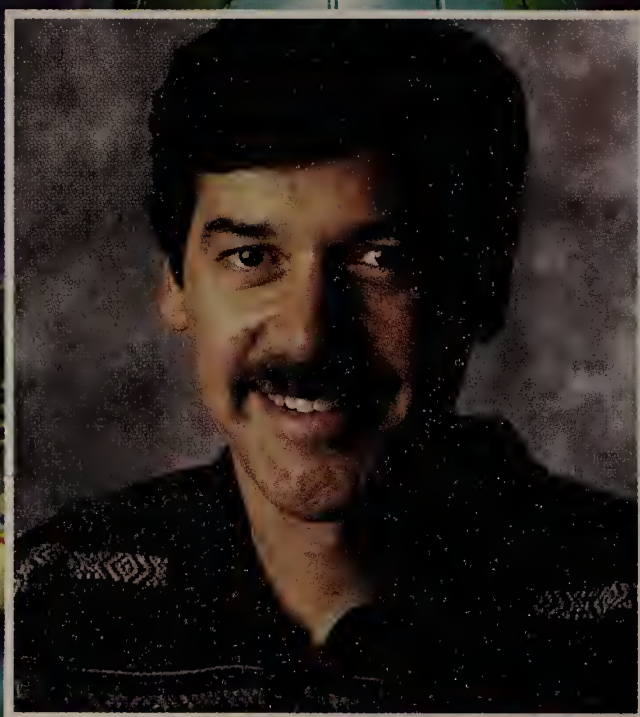
Analysts briefed by the company said highlights of the announcement will be an increased emphasis on Windows NT and improved network and server management capabilities. This includes Windows NT 4.0 support for ServerWorks and ClientWorks management software.

"They are putting more weight behind their Windows NT arrow and are focusing on pushing it across their entire [Intel-based] lines, including their portable products," one analyst said. Digital, for instance, will offer portables prebundled with Windows NT 4.0 next month, he said.

Intel-based PCs represent a vital part of Digital's strategy to implement Windows NT across the enterprise. The company will also introduce 180- and 200-MHz Pentium Pro chips across its high-end Prioris server lines and high-availability features such as redundant power supplies, hot-swappable drives and more powerful server management capabilities across most of its PC servers.

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**Company:** Macromedia, San Francisco, CA

**Title:** President and CEO

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**Latest Project:** Shockwave—the streaming compression and security technology making it possible to display Director, FreeHand, Authorware, xRes and audio files on the Internet. And Backstage—the easiest way to create multimedia Web pages. Shockwave technology has become the standard for multimedia and graphics on the Internet, with explosive growth in the number of "shocked" sites. Campbell's Soup, Virgin Interactive and Paramount's Mission Impossible are among the thousands of leading Web sites using Shockwave technology.

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### Refresher course

Upcoming refreshes on Digital's Intel-based products

- Introduction of 180- and 200-MHz Pentium Pro chips on Prioris servers and Celebris desktop PCs.
- PowerStorm Graphics on high-end Celebris models.
- Windows NT 4.0 support across the board, including ClientWorks and ServerWorks management software.
- Ultra Fast/Wide SCSI support and increased expandability on Celebris.
- 12.1-in. screens and Windows NT 4.0 support on Hi-Note notebooks.

The Celebris workstation line, meanwhile, will go all-Pentium Pro and will feature more powerful Windows NT-based graphics capabilities, greater expandability and support for Intel's latest performance-boosting Natoma Pentium Pro chip set.

Users welcomed the impending announcement but pointed out that Digital's PC woes had little to do with its products.

"Digital has always had good products, but they were never marketed well or consistently," said James Bauer, director of computing support at Bates College in Lewiston, Maine.


"Their products don't seem to last. If you are going to invest in a product, you would like it to be there for a few years," said Chuck Roberson, a senior systems analyst at Citgo Petroleum's refinery in Corpus Christi, Texas.

Digital's PC business unit and its head, Bruce Claflin, have been under tremendous pressure to post profits. The unit was fingered as one of the prime culprits in Digital's disappointing fourth-quarter performance when the company racked up losses of \$433 million.

In the past, senior Digital officials, including CEO Robert Palmer, have said the company is seriously considering alternatives to delivering PC products to Digital customers. Analysts interpreted this to mean that Digital is weighing getting out of PC manufacturing and outsourcing it to third parties.

Digital already has some of its portables manufactured by Citizen Corp. in Japan, and the company reportedly will soon sign a similar arrangement with a Taiwanese manufacturer, analysts said.





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# Stage set for SCO Forum

SCO/HP 64-bit Unix operating system to be in spotlight

By Laura DiDio

Two of the hot topics taking center stage at this week's SCO Forum96 conference will be the new class of \$500 Internet access devices and the brewing battle between Unix and Microsoft Corp.'s Windows NT Server operating system.

Some 14 vendors will demonstrate their upcoming network computers. These are stand-alone, low-end Internet access devices that can serve as alternatives to desktop PCs, said David Coursey, editor of "coursey.com," an industry newsletter. The network computers run TCP/IP and Java as their primary communications and programming mechanisms, and they range in price from \$500 to \$1,000.

About 2,000 Unix users, developers and OEMs are expected to attend SCO, Inc.'s 10th Unix conference at the company's Santa Cruz, Calif., headquarters. The conference will include a series of debates and technical briefings.

While attendees will have plenty of topics to choose from, the

centerpiece of SCO Forum96 will be progress on the SCO/Hewlett-Packard Co. joint development effort to produce a unified 64-bit Unix operating system. The system, called 3DA, will run on Intel Corp.'s forthcoming Merced chip set family.

Due out in the second half of next year, 3DA reportedly will simplify management and provide businesses with the flexibility to run any flavor Unix application.

## More from Merced

"Merced will give me more options," said Dwight Wolfe, manager of Unix systems at CNA Insurance Co.'s Personal Lines Division in Chicago. "Having a unified version of Unix would allow me to mix and match my Unix hardware with any application. It would be wonderful since we have a heterogeneous environment that includes HP-UX, Windows NT Server and NetWare."

Doug Michels, SCO's executive vice president and chief technical officer, said SCO and HP will provide two days of briefings on 3DA.

"We're working closely with Intel, and businesses can be assured that when Intel ships its Merced chip set sometime in 1997, we'll have our 64-bit Unix [operating system] ready to release at the same time," Michels said.

Jean S. Bozman, an analyst at International Data Corp. in Mountain View, Calif., said attendees can also expect to get the low-down on SCO's plans for merging its SCO Open Server and UnixWare environments onto a single platform, code-named Gemini.

Gemini is slated for a mid-1997 delivery. Michels said SCO is working closely with other major systems vendors, including Unisys Corp., Data General Corp., NCR Corp. and Siemens/Nixdorf Information Systems, Inc., to consolidate the Unix industry around the Intel platform.

"Once SCO and HP deliver a unified set of API specifications tool kit, developers will be able to write applications," Bozman said. "I'm anticipating that by 1998 we'll have a convergence of Unix hardware and applications. The SCO Forum96 will highlight the steps that will make convergence possible."

# New servers run on clustered Intel boxes

By Justin Hibbard

Oracle Corp. and SCO, Inc. today will demonstrate the new Oracle7 Parallel Server and SCO's UnixWare 2.1 running on four clustered Intel Corp.-based servers.

"This is an important move in the high-volume Unix server market," said Dan Kusnetzky, an analyst

at International Data Corp. in San Francisco. He said Oracle is using Parallel Server's ability to tie machines across a network to cluster Intel-based machines.

## Part of the pack

The hardware will come from four vendors — Compaq Computer Corp., Digital Equipment Corp., IBM and Unisys Corp. Oracle7 Parallel Server can run on any combination of Intel-based boxes from any vendor, Oracle officials said.

The new version of Parallel

Server was the first designed for clustered Intel-based machines. Previous releases of the database ran only on high-end RISC servers.

The server uses the UnixWare Distributed Lock Manager to track the state of data

## Parallel systems

across multiple machines. If one machine fails, the others recover the committed work and continue the operation.

"I could see it being used in SCO's installed base, certainly," said Ken Sobel, a senior analyst at Hurwitz Group, Inc. in Newton, Mass. "I think they'll use it for applications like customer service, things that just have to be up. I could see it being used a lot in retail."

Oracle, in Redwood Shores, Calif., is targeting the product primarily at automated branch offices and replicated sites — locations where fault-tolerant clustered servers are too expensive but still necessary.

# Outsource services ease network security

CONTINUED FROM PAGE 1

vulnerability and monitors attempts to breach security.

The services also highlight the

greater variety of options available to help network administrators selectively outsource specific management functions.

Both services can help organi-

zations leery of turning over complete management of a network resource to an outsourcer, said Alexandra Whitehead, practice leader for IT outsourcing at G2 Research, Inc. in Mountain View, Calif.

"Eventually, users will feel safe. But in the meantime, they can selectively outsource tasks for a short period, driven by the need to keep up with the Internet and new network technologies," Whitehead said.

INS, an integrator and consultancy in Sunnyvale, Calif., offers EnterprisePro to gather vital signs about network performance.

A customized server checks as many as 5,000 devices within five minutes, stores that data throughout the year and lets support staff interactively query the information from any World Wide Web browser.

"Management software requires lots of effort to configure, but INS immediately provided complementary information to help us diagnose trends and prob-

lems," said Patrick Murray, director of operations at Cable & Wireless Internet Exchange, a global Internet backbone provider in Vienna, Va.

EnterprisePro "frees my staff to focus on planning where we're going, not where we've been," Murray said.

## Satisfied customers

For payroll services firm ADP Corp. in Roseland, N.J., hiring INS helped the network operations staff better serve customer needs, said Michael Del Secolo, senior director of communications engineering.

"This allows me to focus my staff on engineering details and capacity planning, not the mundane gathering of statistics," Del Secolo said. "Quick snapshots available anywhere through a browser interface let [staff] know about anything that's becoming abnormal."

Pricing for EnterprisePro starts at \$30,000 per year to monitor 25 hubs, routers and switches, or about 500 nodes.

Those seeking security help with their Internet connections have a choice beyond their access

provider with ProWatch Secure from NetSolve in Austin, Texas.

First, NetSolve helps assess security and develop policies. Then it installs firewall software and an intrusion detection/response system developed by WheelGroup Corp. in San Antonio to safeguard government sites. Finally, NetSolve monitors this checkpoint and traces suspicious activity.

"It's impressive. They detected one of our staffers who snuck in from an online service and alerted us," said Michael Black, manager of information services at DataWorks Corp., a developer of manufacturing software in San Diego.

## Comfort zone

Skilled and determined hackers can find a way into any system, Black said, but NetSolve provides "a comfortable level of security." As a side benefit, it helps track internal use of the Internet. "We could single out some employees who hit inappropriate Web sites during business hours."

ProWatch Secure costs \$895 per month for monitoring. Setup is \$5,000, and a server costs \$13,750 to \$24,860, depending on network configuration.

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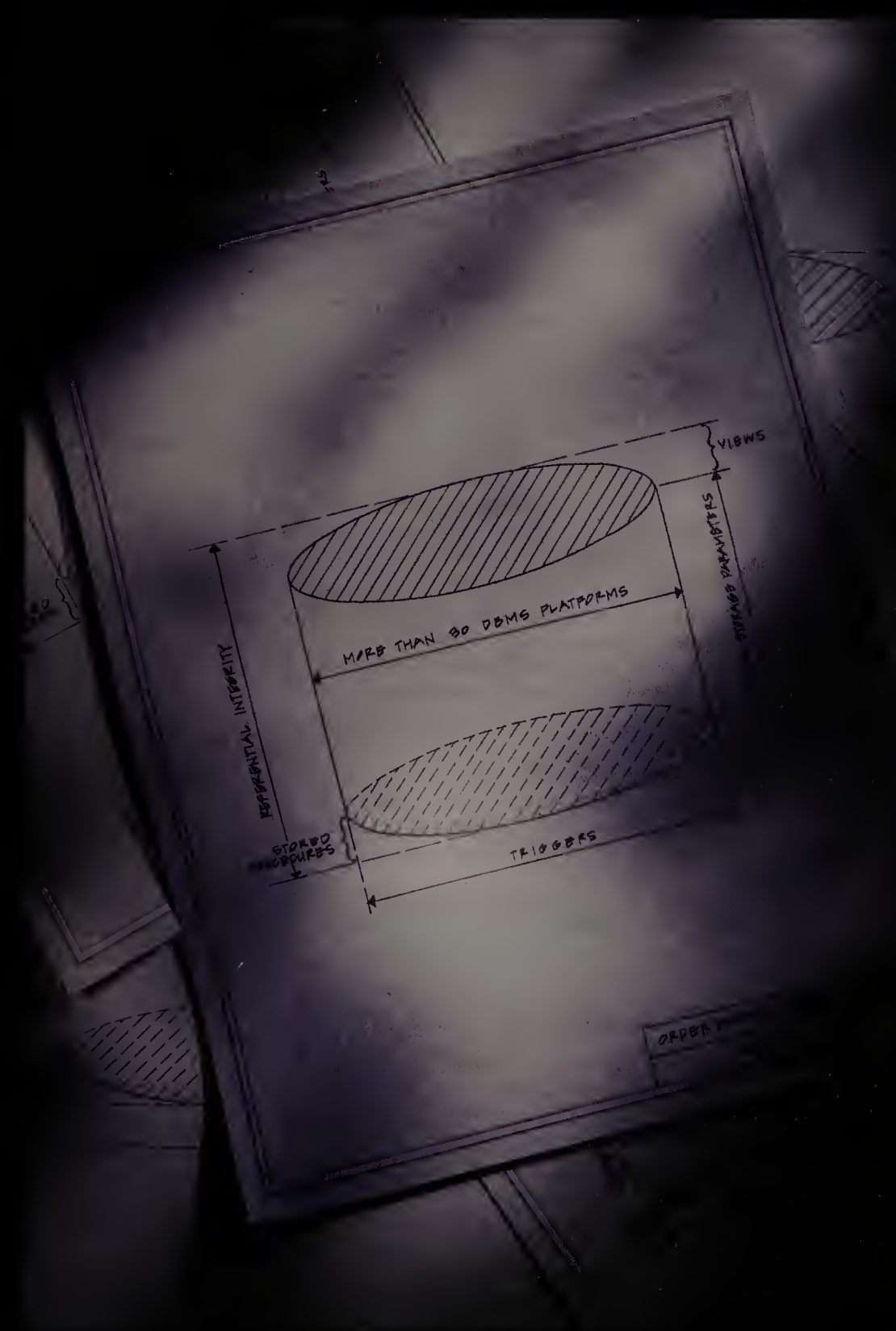
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# Are objects ready for the Web?

Object World attendees will find out this week

By Sharon Gaudin

The area where component technology intersects with the Internet will be in the spotlight at this week's Object World West conference.

"I'm going to try to get a handle on tools and where Java and the Internet stand in terms of components," said Scott Myers, project manager at Shell Oil Co. in Houston. "Are they ready for prime time or not?"

Myers will be one of the 8,000 attendees expected at Object World West, which runs Aug. 18-22 in San Jose, Calif. Conference organizers said keynote speakers and end-user sessions will primarily focus on components, electronic commerce and the World Wide Web as a platform for globally distributed enterprise applications.

Netscape Communications Corp. founder Marc Andreessen will highlight the technological angle on Tuesday.

## More end users

Conference organizers said attendees may find a slightly different conference this summer than in past years.

Bill Hoffman, vice president of business development at Object Management Group, said he expects the audience to be made up of more end users. "Back in '89, it was only the vendors who attended because the end users hadn't figured out [the object-oriented technology] yet," Hoffman said. "Instead of listening to vendors say what their products can do, users now can get to see a guy just like them stand up and say what he used, how it worked and what didn't work. There's a lot of interaction."

About 100 vendors are scheduled to display products and services, and several are scheduled to make announcements. They include the following:

- IBM is expected to showcase an object framework, the San Francisco Project.
- IBM also is slated to team with Sun Microsystems, Inc. for an announcement on object standards and a licensing pact.
- Ontos, Inc., an object-oriented company that has focused on databases, is expected to release several products, including object integration middleware for the Windows NT platform and Java integration designed to enable Java applications to access object models.

**IS managers look for components at Object World.** See page 50.



# Pundits debate whether network computers will unseat Windows

Going beyond his predictions of great success for the network computer, consultant Richard Finkelstein also rang the death knell for Microsoft's Windows dynasty.

"I believe we've seen the peak of the Windows world. ... We're going to a much simpler environment of network computers," said Finkelstein, a high-profile industry analyst and consultant, during his keynote address at Data Warehouse World in New York last week. "It's because of the recentralization of applications. Today, applications have to be deployed on every desktop. The way to better manage something is to create a centralized environment," he said, harking back to the days of the old glass-house data center.

Finkelstein predicted that network computers will largely replace PCs within three years (see story, page 1).

Obviously, the prediction draws considerable argument.

"No, [network computers] will complement PCs. Saying Windows is dead is a bit of a stretch," argued a more cautious Frank Gillett, an analyst at Hurwitz Group, Inc. in Newton, Mass. "He's early. He's projecting that this is where there's a lot of interest, but we're not there yet. We may be, but we're not now."

Microsoft CEO Bill Gates, in a recent interview with *Computerworld* editors, outright scoffed at the idea of network computers overrunning PCs.

"It's not hard to update applications. Remember, what is the biggest applica-

tion on a PC today? The most memory demanding? The browser," Gates said.

"And the PC market is very competitive. ... There are \$800 PCs out there, and that's with quad-speed CD-ROM, 486/75, 8 meg, 640 meg disk."

Gillett noted that the debate is a highly political one. He said the battle is pitting those who would like to see Microsoft's grip on the industry broken — including Ora-

cle Corp., Netscape Communications Corp., Sun Microsystems, Inc. and Apple Computer, Inc. — against those who want to continue their wild ride on Windows' coattails.

— Sharon Gaudin



**Analyst Richard Finkelstein:** *"I believe we've seen the peak of the Windows world"*

## Dawn of net device era?

CONTINUED FROM PAGE 1

Internet security on page 33 in this issue of *Computerworld*. "Within three years, you'll see [network computers] everywhere. It's definitely the next move in the industry."

With a company's information warehoused on the Internet or an intranet, users will

can cost several thousand dollars, Finkelstein said. He added that once those applications are available on the World Wide Web, they won't need to be installed on network computers.

"He definitely got me thinking about it. I would consider it," said Stephanie Thomas, a computer specialist at the

neighborhood layouts.

An assistant information systems manager at a Connecticut-based chemical manufacturer said network computers would ease her administrative and training workload. "We have a wide range of users, from engineers to human resources personnel," the manager said. "They need to know what to do if there's a chemical spill. They don't need to learn

"The existing network infrastructures can do more than the Internet with fancier graphics, better tables and reports, faster access to more data sources," he said. "Working through a browser is an incredibly constipated way to move through data."

Pro-network computer arguments include the following:

- Network computers generally cost less than PCs, which are about \$500 to \$1,000.
- With Internet-based data warehouses, the number of potential users balloons, making the cheaper network computers easier on corporate wallets.
- Network computers would largely eliminate the need to administer software on every desktop, shifting such tasks to the server and reducing IS expense and workload.

Pro-PC arguments include the following:

- Network computers take computing and data control away from the individual.
- PC prices are falling to less than \$1,000, taking a bite out of the argument that network computers are the cheaper answer to computing needs.
- PCs are multifaceted, letting a user do many tasks, whereas network computers were primarily designed to access the Web.

## Up, up and away

Worldwide Internet access device shipments by technology, 1996-2000\*

|                    | 1996   | 1998*  | 2000*  | 1996-2000 CAGR† (%) |
|--------------------|--------|--------|--------|---------------------|
| PCs                | 33,349 | 47,980 | 72,605 | 21.5                |
| Internet PCs       | 15     | 400    | 2,500  | 259.3               |
| Internet terminals | 202    | 894    | 2,993  | 96.1                |

\*Projected †Compounded annual growth rate

Source: International Data Corp., Framingham, Mass.

need only a browser to access information that includes sales, trends, personnel and stocks, Finkelstein explained. Network computers were designed to display information transferred over intranets or the Internet, without the desktop application capabilities of PCs.

By adding a few basic word processing or spreadsheet applications to the network computer, workers would have all the access they need at about \$400 or \$500 per computer, compared with PCs, which

New York City Fire Department. "Not everybody needs full computer usage with Windows and everything."

Thomas is preparing to build a data warehouse for the city's fire department. She went to the conference to research the various tools and get a sense of direction. She came away nurturing the idea of network computers in every firehouse that could inexpensively link firefighters all over the region to critical information about building designs, escape routes and

about [Microsoft Corp.] Word. Using a browser would be much easier for them ... and less expensive for us."

## No sale

But far from everyone is convinced. For network computers to boom into the market, the Internet has to be the next great wave in data warehousing. One voice that disputed that notion belonged to Brian Murphy, an analyst at The Yankee Group in Boston and an attendee at DCI Data Warehouse World.

**Data warehousing tools** are sought. See page 50.



# Microsoft courts Macintosh 'net developers

By Lisa Picarille

While Apple Computer, Inc. shifts its focus to the Internet, Macintosh developers and users are already benefiting from an aggressive Macintosh Internet effort by rival Microsoft Corp.

About a year ago, Microsoft set up an eight-person office in San Jose, Calif., to work on Internet-related projects — primarily a Macintosh version of Microsoft's Internet Explorer browser (see Explorer review, page 60 and related story, page 1).

That effort produced a well-respected Macintosh browser and put Microsoft in the role of fostering closer relationships with other Macintosh Internet developers.

Some Macintosh developers are embracing Microsoft in part because of a perceived history of mistreatment by Apple. In

Apple's dwindling market share to diffuse possible allegations of antitrust that could be raised if Apple went out of business.

"As for some of the allegations about our motives ... they are completely unfounded," wrote John Ludwig, Microsoft's vice president of the Internet Platform and Tools Division, in a response to an online

newsletter's request for a Microsoft comment on that published report.

"Microsoft is the biggest developer of Mac software, and it makes sense if you are in a battle with Netscape to cover as many platforms as you can, especially if you already have an established reputation," said Jeffrey Tarter, editor of "SoftLetter," an in-

dustry newsletter in Watertown, Mass.

But ultimately it's the users who benefit from the availability of more applications. One Mac user said he wasn't particularly concerned with Microsoft's motivations as long as there are more quality Mac applications from the Redmond, Wash., software developer and others.

## Helping hands

Microsoft's San Jose, Calif.-based Macintosh Internet group is working with several Macintosh developers to help bolster development of Web-based products on the Macintosh.

Microsoft has helped other developers by:

- Sponsoring a Microsoft Internet Developers Association booth at Macworld
- Offering development assistance
- Sharing technology and knowledge of the Internet
- Offering co-marketing deals
- Offering financial assistance

the past decade, many Macintosh developers complained that Apple identified and set aside new market segments for third-party developers, then stepped in and put those same developers out of business by releasing competing Apple-brand versions of the technology or by incorporating the technology into the Mac OS.

One Macintosh Internet developer, who demonstrated an application in a Microsoft-sponsored booth at Macworld Expo in Boston earlier this month, said he has found Microsoft to be very helpful.

"They are working with other developers, exchanging information and helping out with co-marketing opportunities," said Alexander Hopmann, president of ResNova Software, Inc. in Huntington Beach, Calif. (see chart).

## An established player

Microsoft isn't a new player in the Macintosh market. The company has more than 30 Macintosh titles and is the biggest seller of Macintosh applications, selling more than \$200 million worth of Macintosh software last year, according to Dave Meltzer, group product manager for the company's Macintosh applications.

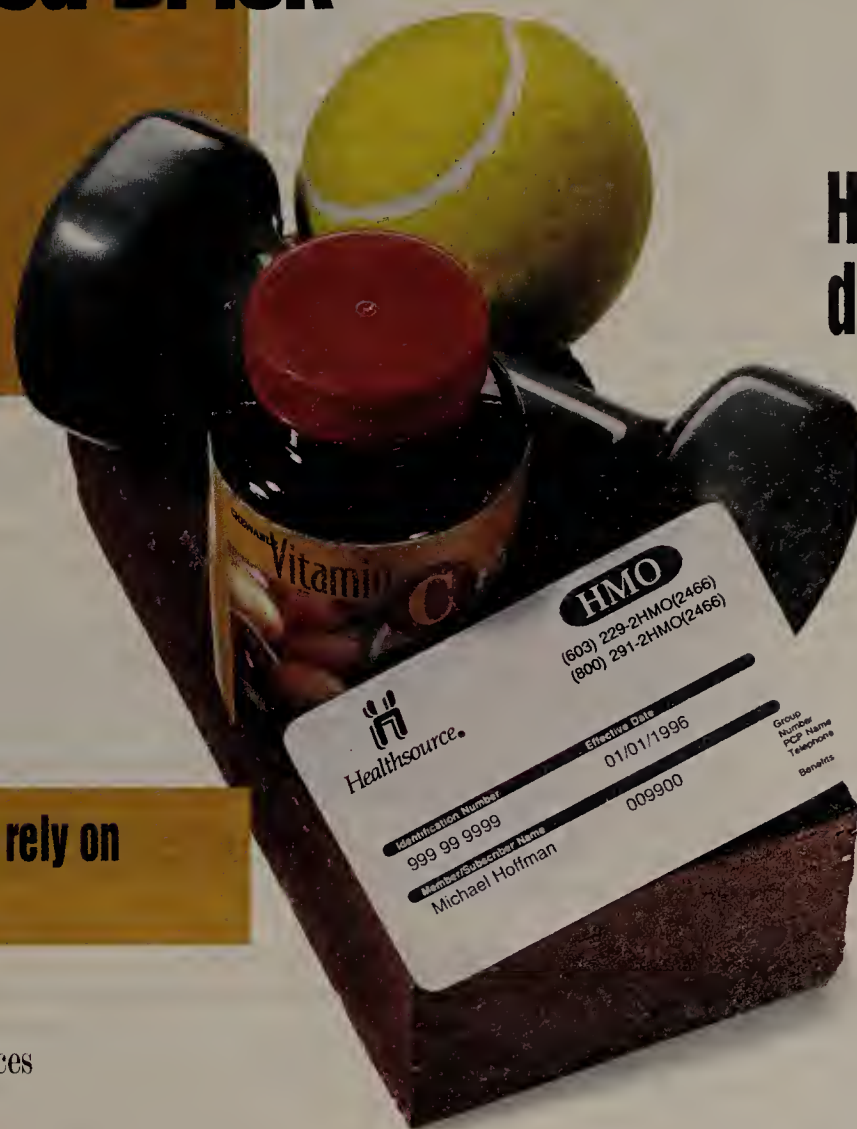
An article in *The Wall Street Journal* last week raised the specter that Microsoft set up this Macintosh Internet unit to prop up

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## ActiveX security gap uncovered

CONTINUED FROM PAGE 1

called Exploder, can be seen on a Web page at [www1.halcyon.com/mclain/ActiveX](http://www1.halcyon.com/mclain/ActiveX).

When the page is downloaded by Internet Explorer 3.0, the Exploder component will perform a clean shutdown of Windows 95.

If the PC has certain power-saving features, the component will even turn off the computer.

### Flaws found

ActiveX components and Java applets are small programs that can be downloaded across the Internet and run within a Web browser [CW, July 29].

Researchers had found a series of security flaws in Java that Sun Microsystems, Inc. has fixed since it officially released the programming language last January. But the Exploder is one of the first demonstrations of security holes in ActiveX.

Internet Explorer users were concerned, but not panicked, by news of the security flaw.

"It is something we're aware of, but we haven't taken any steps to protect ourselves against it. We haven't felt exposed yet," said Greg Hubly, marketing vice president at Alpenglow, Inc., a CD-ROM and Internet page builder in Woodcnville, Wash.

One reason for that confidence is ActiveX's system of "digital signatures," which can be set to warn users before components are downloaded and indicate a component's source.

With the digital signatures, components are marked with the identities of their creators. If users set Internet Explorer to the highest level of ActiveX security, they can download only components signed by companies on their list of authorized vendors.

"Your browser will not let you download components unless they're built by a company you've OK'd," said Patrick Connolly, a

developer at InvestorsEdge, an online financial services provider in Mill Valley, Calif. "If the code is not signed, you can't download it."

True enough, said Fred McLain, the Web component designer at Apropos, Inc. in Bothell, Wash., who created the Exploder component.

But it is still up to users to determine which sources of components are safe — and security can easily be set lower than the maximum.

And as ActiveX components proliferate on the Web, users will hit components from many unfamiliar companies.

That will likely encourage many users to lower their browser's security levels and try out the components — with potentially disastrous results.

"Anything a Windows application can do, an ActiveX component can do — from wiping your hard disk to searching it and sending off data," McLain said.

### False alarms

Worse still, the Microsoft browser often misidentifies noncomponents such as music files as ActiveX, McLain said.

"Internet Explorer cries wolf all the time — that's one of the things that makes it so dangerous," he said.

Microsoft knows about McLain's demonstration and is working to tighten ActiveX security, said Keith Szot, lead product manager for Internet security at Microsoft.

"We're working on improvements, but there's a trade-off," he said. ActiveX security depends on users' paying careful attention to the digital signature of each component, Szot noted.

Whether that is realistic in the freewheeling atmosphere of the Web remains to be seen. "I don't download anything for the sake of downloading it," Hubly said. "[Security is] always a concern."

### Internet components

## Web browser frustrates users

CONTINUED FROM PAGE 1

culties included the following:

• **Seemingly dead links.** When users tried to go to various Web sites, the browser didn't respond. It also didn't follow hyperlinks on some pages.

• **Cursor and mouse freezes.** In some cases, users had to reboot.

### Installation

snafus. If a minimum 30M bytes of disk space wasn't free to accommodate Explorer, the installation process simply stopped with no warning or explanation.

• **Flickering screens.** Screens can fade in and out like a loose lightbulb while loading Web pages. One user called them "poltergeist pages."

Further, users

who want to run Explorer 3.0 on the current version of Windows NT are out of luck: The browser requires the final release of NT 4.0, but that product hasn't shipped yet. It is due this month.

"I hope Microsoft can get its act together, but I doubt it," said Gerry Bower, a network analyst at the Communications Research Centre of the Canadian government in Ottawa. Vexed by 3.0, Bower has reverted to using Explorer 2.0.

### Help online

A Microsoft official said he knew about some of the problems users said they encountered last week.

The vendor has posted descriptions and work-arounds at its Web site ([www.microsoft.com/IESupport/content/Issues/](http://www.microsoft.com/IESupport/content/Issues/)).

For example, users who run Novell, Inc.'s Client32 package for accessing NetWare servers from Windows 95 PCs can't connect to

Web pages smoothly, acknowledged Kevin Unangst, Explorer product manager. These users must insert special code and change some values in their registries.

But other difficulties, such as Web-access glitches when Client32 isn't present, were news to Microsoft.

er out of beta testing too soon. "We're very happy with the quality of the code as we've shipped," he said.

Unangst advised users to file bug reports by telephone or at Microsoft's Web site.

And filing they are. They have flooded Usenet and Microsoft's newsgroups with complaints.

For example, while some users were confused by Microsoft's leaving them no choice of the disk drive for installing most Explorer files, others were plain mad.

Microsoft's elimination of user choice in this situation was "quite stupid," one angry poster said. "Pure arrogance," another said. Yet some loss of choice is to be expected, Microsoft officials

said. The vendor is gradually making Explorer part of the Windows operating system, so some of the browser's executable files must reside beside Windows files, Unangst explained.

### Feathers ruffled

But one user was not assuaged.

"It bothers me to no end that Microsoft is updating various parts of the OS when you install their browser. They should have to play by the same rules as everybody else, using the OS as is," said Rob Burgess, an avid browser user in Montreal.

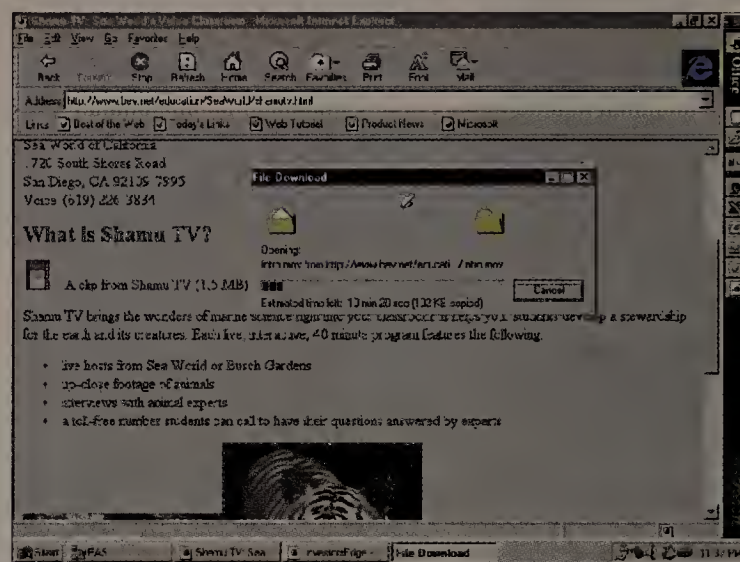
Another problem cropped up in Microsoft's nonstandard implementation of style sheets. Style sheets are templates that define color, layout and other aspects of building Web pages.

Jennifer Jensen, a Web developer at Accessible Computer Systems, Inc. in New Westminster, British Columbia, said margins set in spreadsheet-like tables, for example, were inexplicably lost when she tried to create them with Explorer 3.0.

Those glitches won't affect a majority of users, however, because most Web pages are built with the Hypertext Markup Language.

Yusuf Mehdi, a group product manager at Microsoft, admitted that Explorer has played second fiddle to Navigator.

"With 1.0, we were just getting into the business, and 2.0 was a catch-up to Netscape," Mehdi said. "Now we're ready to go."



Some users have experienced cursor and mouse freezes and installation problems when using Microsoft's Internet Explorer 3.0

"We haven't heard of it elsewhere," Unangst said. He added that the company also hadn't heard of the intermittent system freezes.

Most confusing, perhaps, is that some users reported no problems at all.

Unangst maintained that despite Microsoft's neck and neck race with Netscape in the browser realm, the Redmond, Wash.-based vendor didn't shove Explorer

### The madding crowd

More than 32,000 people downloaded Explorer in the first six hours it was available last week, Microsoft officials claimed. Eight T3 lines piped user requests to Microsoft's Web site. Added servers in San Jose, Calif., and Washington handled 6,000 and 2,100 users, respectively.

## Explorer 3.0 rollout puts Microsoft on Netscape turf

The relentless drumbeat of new browser rollouts continued last week with Microsoft's release of Internet Explorer 3.0.

The upgrade, which runs on Windows 95 and Windows NT, puts Microsoft on par in both features and speed with browser rival Netscape, users and analysts said.

Version 3.0 matches Netscape Navigator's features by

adding the following:

- Full Java support.
- Internet mail and news readers, online chat and a shared whiteboard.
- Support for "cascading style sheets," which are tem-

plates that define color, layout and other look-and-feel aspects of building Web pages.

- Support for several full-motion video and audio formats.

- Enhancement to HTML, including support for the HTML 3.2 standard.

To read our in-depth review of the new Internet Explorer, turn to page 60 in this issue or check it out electronically at [www.computerworld.com/news/news\\_articles/960814msierev2.html](http://www.computerworld.com/news/news_articles/960814msierev2.html). Join our online forum at [www.computerworld.com](http://www.computerworld.com).

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(b) Netware (f) Windows NT  
(c) OS/2 (g) Windows  
(d) Unix (h) NeXTstep

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Networking Products ☐ Yes ☐ No

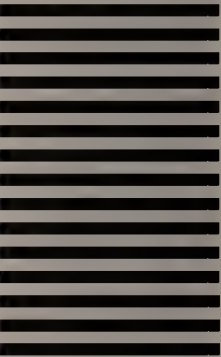
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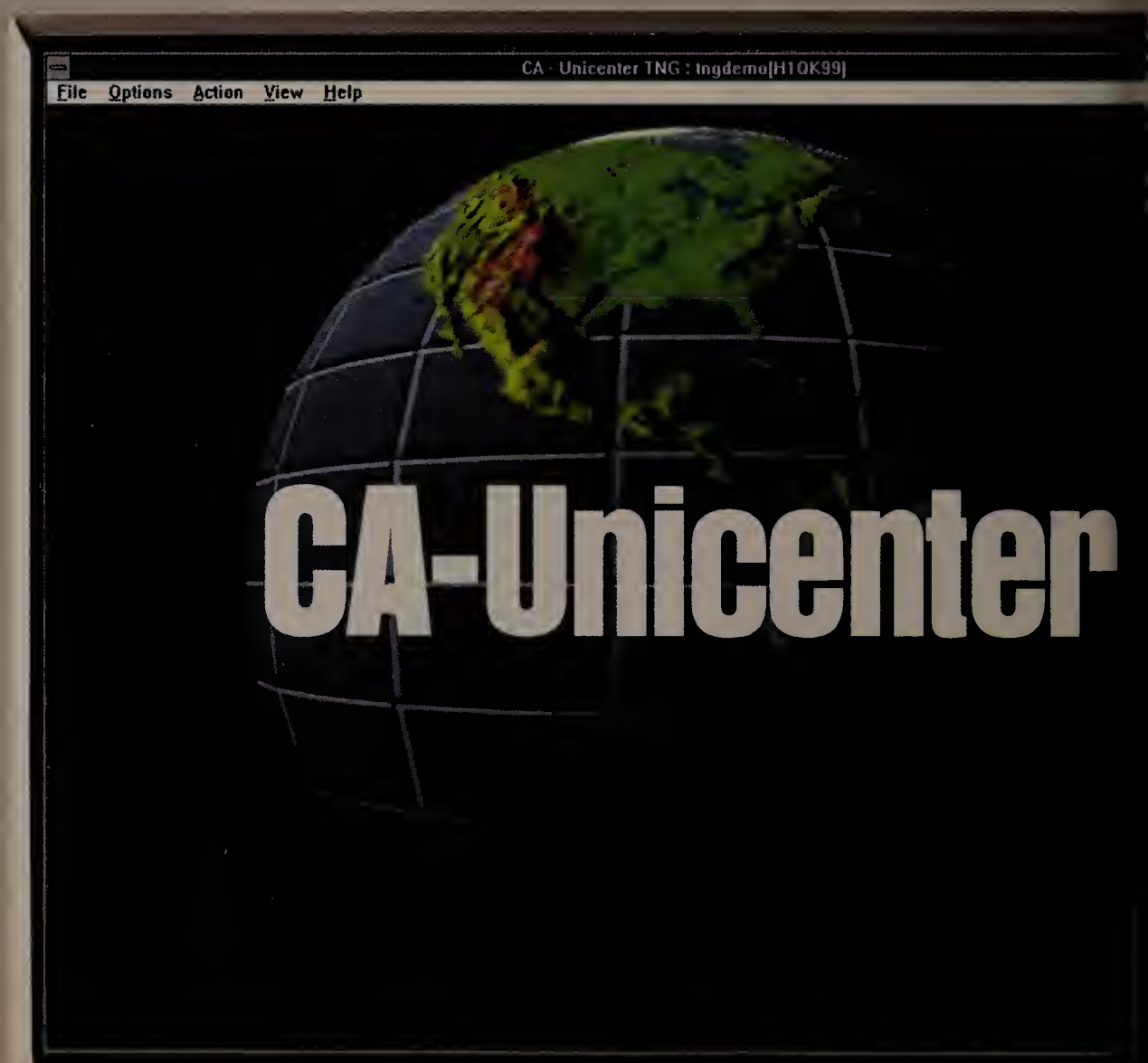
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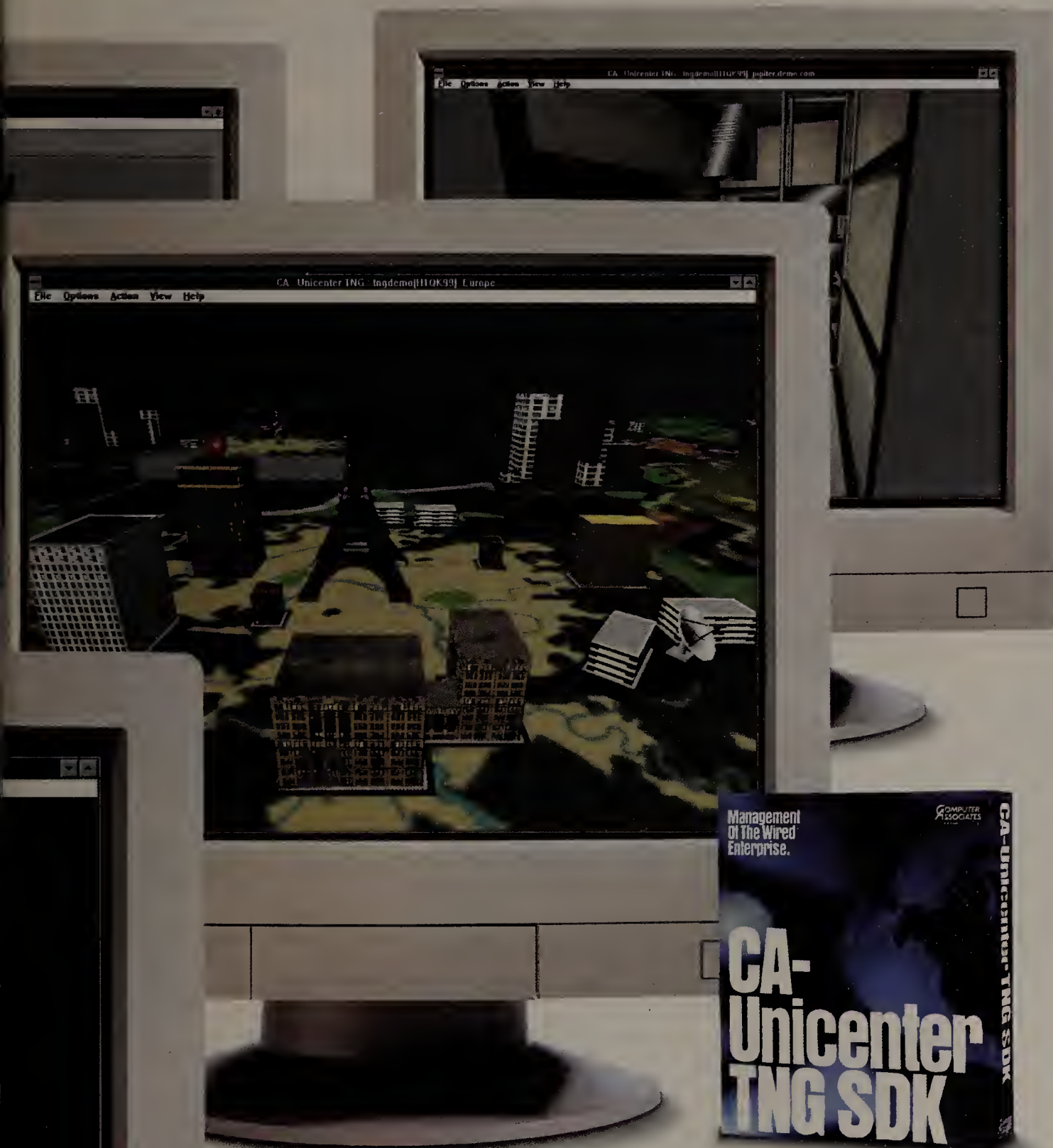
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# SAP vies for slice of R/3 implementation pie

By Julia King

If you want something done fast, do it yourself.

That is the thinking behind SAP AG's new accelerated R/3 implementation service called ASAP. Experts said it could save

users millions of dollars by shaving months off R/3 project schedules.

Announced last week, ASAP marks the software vendor's entry into the multi-million-dollar R/3 implementation market. Until now, SAP has relied largely on third-party partners, such as Andersen Consult-

ing, which typically furnish R/3 skills as part of larger, often multiyear re-engineering projects.

"We will not be replacing these partners who still have strong vertical industry and change management expertise," said Eileen Basho, vice president of SAP's profes-

sional services organization.

Instead, "SAP's focus will be on the R/3 product, implementation and tools. The way to staff a project is with a balance of all of these skills," she said.

One possible downside of this approach, however, is there could be more project management work for customers, who would need to coordinate the different consultants' activities.

Basho said SAP will bill clients on a time-and-materials basis, but she declined to specify a rate.

Typically, an R/3 project team includes between six and 15 outside consultants.

Their daily labor

rates can range

from \$800 for

an ABAP/4

programmer to

\$3,500 for a

project supervi-

sor from a Big

Six consulting

firm, according

to David O.

Dodge, director

of IBM's SAP

Consulting and

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At the heart

of SAP's fast-

track R/3 program is a comprehensive set

of 800-plus business-process templates

called the Business Engineering Work-

bench. Customers match their require-

ments to the processes that best suit their

needs, make adjustments and configure the

R/3 software. Or SAP consultants can con-

figure and test the software, which frees

users to attend R/3 training classes.

Before ASAP, most users started the con-

figuration process from scratch by design-

ing customized business processes and set-

ting R/3's tables to match.

Now, configuration "will take days to

weeks, as opposed to months," Basho said.

## Quick and basic

"ASAP is really designed for a company that doesn't have the luxury of time. It's really a baseline approach. There's no change management, business process re-engineering or customization," said Susan Irving, an analyst at Aberdeen Group, Inc. in Boston.

Several companies use ASAP, which will be showcased at SAP's user conference in Philadelphia later this month.

Intersolv, Inc., a \$150 million software company in Rockville, Md., is an ASAP pilot site that began implementing R/3 last month. The system is slated to go live in early December.

Intersolv is installing SAP's financial, sales and distribution, materials management and production planning modules. Five to 10 SAP consultants work on the project at different times. Another 20 people from Intersolv are assigned part-time.

"We did not shop around for an implementer because we wanted SAP to have a stake here," said Greg Gehring, vice president of information services at Intersolv.



**Intersolv's Greg Gehring:** The firm wanted SAP to have a stake in its organization

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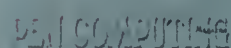
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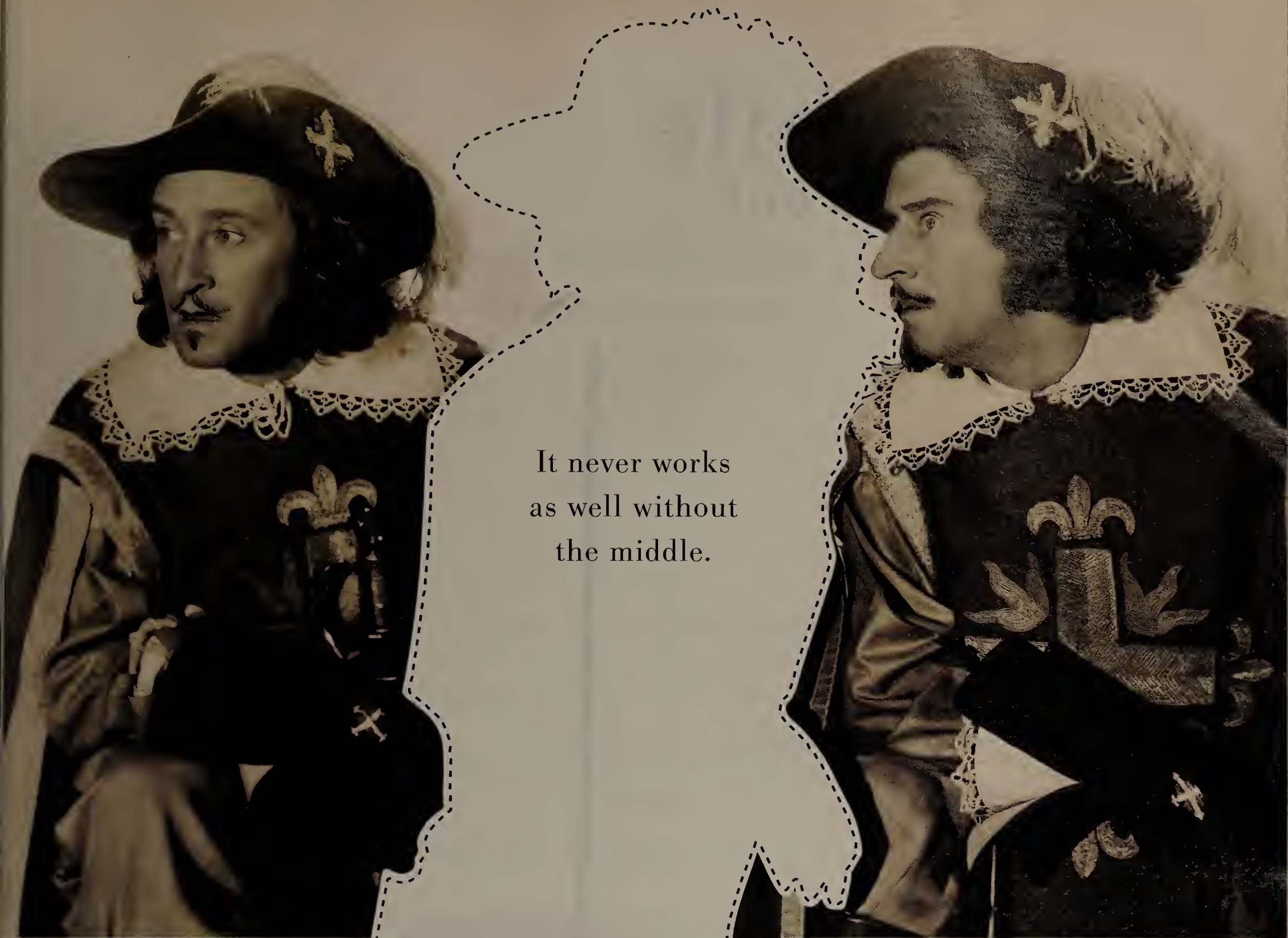


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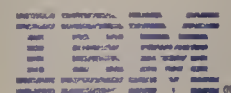
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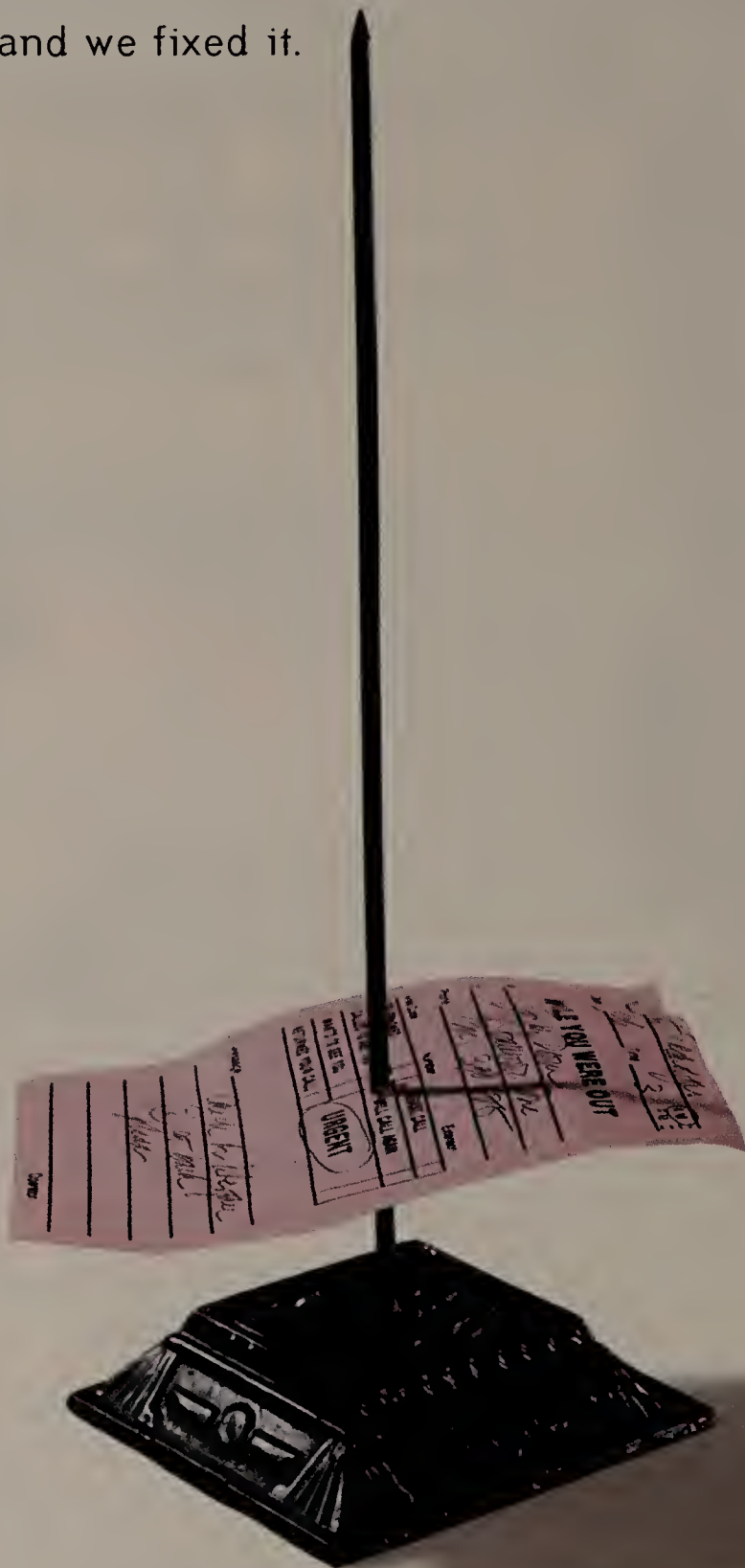


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# Sorry! Money can't buy you laptop

By Mindy Blodgett

The exploding demand for notebooks has suffered a head-on collision with a market already struggling with an acute shortage of some key laptop components.

Many users said supplies, especially

those for high-end, multimedia models, are low and that they can't get their hands on machines of their choice.

Vendors that are undertaking a massive upgrade say shortages of larger 11.3- and 12.1-in. active-matrix screens and CD-ROM drives are hampering their efforts to

take advantage of demand.

It's not a pretty picture.

"The availability issue is becoming a real headache," said Kevin Danehy, manager of workgroup applications development at Millipore, Inc. in Bedford, Mass. "The last time one of our divisions wanted to buy ma-

chines, there had been all these great announcements. So the guy running it went looking for IBM 120-MHz or 133-MHz ThinkPads. Nothing. He finally bought machines with 100-MHz chips."

"Absolutely terrible" is what Jon Sweet, information management director at tax consultancy Du Charme, McMillen & Associates, Inc. in Fort Wayne, Ind., called laptop availability. "We call the distributors, and they tell us they have an order backlog and their hands are tied. We end up buying whatever is available."

The top vendors, including Toshiba America Information Systems, Inc., IBM and Compaq Computer Corp., are especially affected by the shortages, said Randal Giusto, an ana-

lyst at International Data Corp. in Framingham, Mass. "Users go to them first. And when they can't get laptops from them, they go to second- or third-tier vendors."

Midtier vendors such as Texas Instruments, Inc., NEC Technologies, Inc. and Dell Computer Corp. are benefiting from the shortage.

Complicating the supply problems is the component shortage.

Analysts said the supply of 11.3- and 12.1-in. active-matrix screens is expected to stay low throughout 1996 and into next year. Industry observers said Japanese screen makers are shifting their production technique to accommodate larger screens.

Possibly more telling is that Japanese screen makers are only gradually increasing production of larger screens because they have a surplus of 10.4-in. displays, a size from which vendors have moved away.

"Let's just say we have not built a single notebook with a 10.4-in. screen in several months," said Dave Richardson, senior vice president and general manager of mobile computing at TI.

Vendors are also grappling with their inability to forecast demand. Demand is high and supplies are low now, but that could change in January. "The component and supply shortages are not going to go away industrywide because component management is the most difficult thing to manage when you are trying to grow a business at this pace," said Jeffrey Friederichs, worldwide marketing manager at Toshiba.

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# States eye online revenues

## Debate rages over who can see what for how much

By Gary H. Anthes and Mindy Blodgett

As state and local governments open their vast databases to online access, they are running into tough questions about data ownership, costs, access rights and privacy.

The city of Phoenix, for example, had barely completed an \$8 million geographic information system (GIS) when a local information company demanded the whole database in a Freedom of Information Act request.

Phoenix faced a dilemma. Because the public paid for development of the GIS, should it be given access to it for free?

Should the city charge just the marginal cost — pennies per transaction — of providing GIS data to the public? Or, should it generate some badly needed revenue for the city by charging full-market rates?

Guided by state law, Phoenix elected to charge commercial users full commercial rates — \$36,000 for the database, or \$25 for a digital map.

The county of Los Angeles has been embroiled in a legal controversy for more than a year about its plans to sell electronic access to court records. Last April, it offered commercial information resellers access to the database for a one-time charge of \$49,000, plus a transaction fee of 20 to 40 cents.

### Pricing at issue

"That's way too much money, and it's way above what it costs them to produce the information," said Dan Duncan, vice president of government relations at the Information Industry Association (IIA) in Washington (see related story this page). "And it denies access by the general public to a very important set of records."

The IIA and others say public information should be free or, at most, priced to cover just the incremental cost of providing it to the public. That could be the cost of a disk and postage or a few pennies per minute for connect time.

In fact, that is the approach taken by most state governments. For example, the Information Network of Kansas (INK), a state agency, offers access to several thousand state databases, about

80% of them for free, at [www.ink.org](http://www.ink.org). The remaining ones, such as driver records, are available for a fee.

A vehicle registration record costs \$5 if obtained on paper at a government office but only \$4.50 if obtained online, said Harry Herington, vice president and general counsel of the INK. The fee-based services are used mostly by commercial concerns such as insurance firms and cover all the costs of providing data to the general public, he said.

Not everyone finds fault with attempts to get market rates for government information. "Local governments have no incentive to develop these kinds of applications unless they can recoup some of the costs of making them available," said

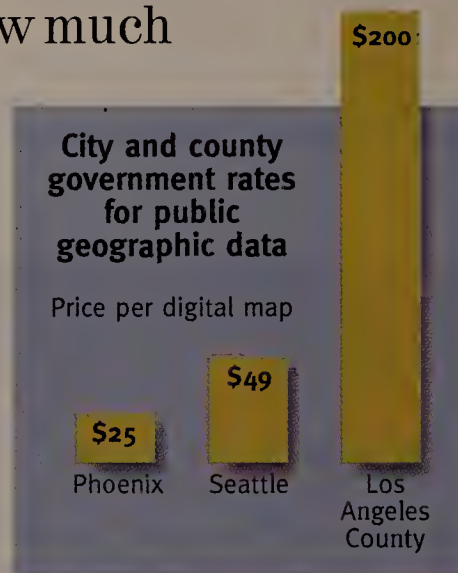
Mike Humphrey, business director of telecommunications and infrastructure at Public Technology, Inc., a Washington-based firm that advises local governments.

The firm, at [www.pti.nw.dc.us](http://www.pti.nw.dc.us), has published a methodology by which government information services can be priced to

cover all systems costs, including development investments.

Meanwhile, privacy advocates said they worry about the rush to make money on information held in government databases, which includes motor vehicle, real estate and court records.

In April, the Internet directory Yahoo, Inc. and Database America Cos. stirred up a storm of controversy when they



Source: Public Technology, Inc., Washington

posted a directory of 90 million private numbers nationwide to the Yahoo page on the Internet, including unlisted home telephone numbers. The companies removed the unlisted phone numbers from their online directory.

"The states are starting to flirt with putting some restrictions on what goes online," said David Linowes, a privacy expert at the University of Illinois in Champaign. "But at this point there is no clear-cut guideline on what is the proper realm for some of this information."

The state laws that govern who may have access to what information in paper form govern equally the online world, said Hud Croasdale, director of Virginia's Council on Information Management.

But that can be tricky in either environment, Croasdale said. "It's basically a balancing act between the Privacy Act and the Freedom of Information Act," he said.

Marc Rotenberg, director of the Electronic Privacy Information Center in Washington ([www.epic.org](http://www.epic.org)), questioned whether the speed now possible for disseminating information online could lead to private or inaccurate information seeping out.

## After 'should we?' it's 'how do we?'

The privacy issue and the question of charging for public data are only parts of the battle for cash-strapped governments that would like to become electronically accessible. There are the tough questions of how to fund and build the databases and networks.

Just as in the commercial world, cities and states can either outsource the whole thing or roll their own.

For example, the state of Kansas decided to outsource the development and operation of its public information network, partly to allow it to avoid procurement red tape.

"The other reason was they didn't want to spend any money," said Harry Herington, vice president of the INK, a state agency that manages the online service but outsources its operation to a local company. The company recovers its costs through user fees and remits a portion back to the state, he said.

"The network is a tremendous cost savings," Herington added. "We save on phone calls, mailing expenses, faxing and printing; plus it frees up government employees for other things."

But some jurisdictions are willing to make considerable investments.

The city of Seattle has devoted three people full-time over two years to set up and run its Internet service, which uses World Wide Web and Oracle Corp. database technology.

"It's a huge effort," conceded Roger Iida, a senior systems analyst for Seattle.

Much of the work involved training the owners of data in other city departments and outside government, Iida said.

But the setup cost was primarily in labor. "We used mostly free-ware on our Web server," Iida said.

Iida said Seattle decided to do the whole job itself because it couldn't rely on outsiders to maintain the myriad of rapidly changing databases.

— Gary H. Anthes



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## Individual privacy vs. public access

Controversies can erupt when public information that once was difficult to gather is put online.

A computer consultant recently paid the state of Oregon \$222 for the database of the motor vehicle services division, which he put online.

State residents are in an uproar that information such as home addresses are now available to anyone with an Internet account. According to the Associated Press, one person fretted that a robber could spot a car at a sports event, jot down the license number, then rob the house.

Last week, Oregon governor John Kitzhaber asked Aaron Nobil to close down his site, but he refused. Kitzhaber has called for an examination of the privacy issues.

— Mindy Blodgett



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# Computer Industry

## Hold the phone

### Hang-ups slow Internet telephony

By Stewart Deck  
and Kim Girard

Despite its shortcomings, Internet telephony is slowly emerging as a way for business users to communicate with colleagues and customers.

Mark Winther, an analyst at IDC/Link, a consultancy in New York, predicts the number of Internet telephone users will jump from 500,000 last year to 16 million by 1999.

Those new users will be attracted by cost savings, especially on international calls. For example, with a \$20-per-month Internet connection, users can enjoy unlimited conversations.

#### Concessions

But to realize those savings over traditional long-distance lines, users will have to accept lower-quality voice, some difficulty in making connections and interruptions caused by crowded Internet circuits.

Several vendors have jumped into the Internet phone fray in recent weeks. Some of their applications require a souped-up, \$3,000 multimedia PC.

Others require a more mod-

est \$200 investment in a sound card, an audio headset and an Internet connection.

So far, user interest hasn't translated into sales.

"Right now, none of these [Internet phone] companies are showing profits, and sales are meager because no one has been able to sign the big corporate accounts," said Jeff Pulver, chairman of the Voice on the Net Coalition in Great Neck, N.Y.

Still, the products keep rolling out. IDT Corp. in Hackensack, N.J., has launched Net2Phone for making phone calls over the Internet from a PC to any regular telephone.

Douglas P. Lang, president of Washington-based High Technology Store, a marketer that

sells over the World Wide Web, called Net2Phone "revolutionary."

VocalTec, Inc.'s Internet Phone Telephony Gateway Server connects two locations through a company's private branch exchange. It costs \$3,995.

#### Quality control

That gateway could allow companies with spare bandwidth on an intranet to set up internal phone-to-phone communications between branches, Pulver said.

"This is much more plausible than a lot of other overhyped gateway products, and it would give companies control over quality and delivery," he said.

Eric Carlson, owner of North Shore Marketing in Derry, N.H., estimates he receives more than 10 inquiries each week through his Microsoft Corp. NetMeeting Internet phone connection.

"Once you get used to the quality and the way you have to take turns talking [because the system isn't full-duplex], it's fine," Carlson said.

The voice quality is different because, unlike normal phone lines that use dedicated circuits for each call, the data packets of the phone call are mixed in with lots of other packets on the Internet circuits.

### Internet applications

#### Number of Internet telephony users

1995 500,000

1999 16M\*

#### Internet telephony revenue

1995 \$3.5M

1999 \$550M\*

\*Projected

Source: International Data Corp., Framingham, Mass.

### Briefs

#### DOJ probes IBM

The U.S. Department of Justice is examining whether IBM's recent deal to resell subsystems made by Storage Technology Corp. violates antitrust laws, according to a StorageTek filing last week with the Securities and Exchange Commission. IBM in June announced it would resell three of StorageTek's disk arrays for the mainframe market — the Iceberg, Kodiak and Arctic Fox arrays. IBM has resold these sub-

systems under its Ramac storage banner since last month. IBM made the deal with StorageTek to better compete with market leader EMC Corp. Spokesmen at IBM and StorageTek said the companies' lawyers foresaw the potential of a federal inquiry when the companies made their deal. "I would say this inquiry was very much expected," said David Reid, a spokesman for StorageTek. "We believe that if the Justice Department decides to pursue this case, they'll conclude [the companies' agreement] is within the spirit of the law," he said.

#### Cyrix VP resigns

Microprocessor manufacturer Cyrix Corp. last week announced the resignation of James Chapman, senior vice president of sales and marketing. The announcement follows a \$16.3 million quarterly loss at Cyrix.

#### Publishing CEO out

Irfan Salim resigned as CEO of Software Publishing Corp. after the San Jose, Calif., firm posted a third-quarter loss of \$4.4 million on \$2.2 million in sales. That compares with a loss of \$400,000 on sales of \$4.4 million in the third quarter last year.



Advanced Modular's Ken Olsen is courting VAX server sites

## Olsen's strategy: VAX to the max

By Jaikumar Vijayan

Apparently there is still money to be made in the legacy business. At least, that's what Advanced Modular Solutions, Inc. is betting on.

In a strategy that analysts said is both opportunistic and risky, the small company in Acton, Mass. — whose chairman is Digital Equipment Corp. founder Ken Olsen — recently announced high-end clones of Digital's VAX servers.

The company is trying to convince corporate legacy sites that stretching their hardware dollars with periodic upgrades is sometimes better — and cheaper — than wholesale technology refreshes.

The VAX announcement comes at a time when Digital is reportedly close to its final VAX upgrade [CW, Aug. 5].

"There is a very large community of VAX users out there today ... but Digital is moving away from them so aggressively that soon there will be no organization to support the product and its applications," said Dave Nesbit, VAX program manager at Advanced Modular Solutions.

Terry Shannon, editor of "Shannon Knows DEC," a newsletter in Ashland, Mass., said, "This is a slick product for people who don't want to go messing around with architectural changes or application recompilation."

Since the company was established in 1992, Modular has been

quietly trying to carve a niche for itself by helping customers stave off hardware obsolescence. Apart from the VAX clones, the company also has a range of server technologies that help users upgrade and tie their systems in to more recent client/server environments.

"Usually, when we outgrew our servers, we simply had to replace them," said Lloyd Hamm, senior vice president and chief information officer at Eastern Bank in Lynn, Mass. "But as we have grown from a company of \$700 million to over \$2.1 billion in assets, the only platform that grew with us through all the [attendant] changes was Modular's."

#### Rough waters ahead

But Modular's strategy is fraught with danger, analysts said.

For instance, the costs of training staff and maintaining and supporting legacy environments are increasing. Older, proprietary architectures are also lagging well behind current technologies in the price/performance curve, and users will have an increasingly hard time justifying their legacy installations, analysts said.

"There's going to come a point when users are going to say, 'Enough is enough,' and just dump their legacy systems," said James Garden, an analyst at Technology Business Research, Inc. in Hampton, N.H.

**& NCR beefs up its servers.** See page 37.



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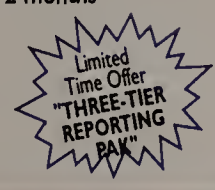
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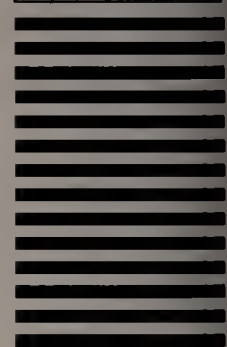


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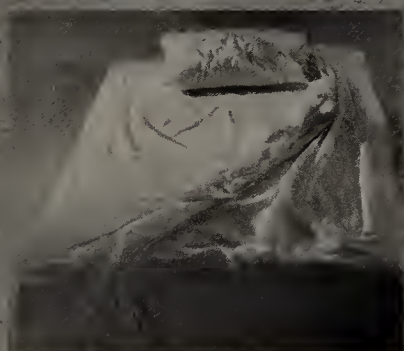
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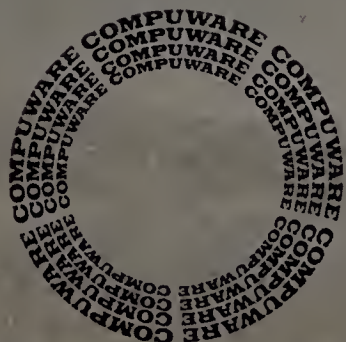
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## Editorial

## Software by wire

I wonder if history will record the release of Windows 95 a year ago this Saturday as the last great software product launch, much as *Ben Hur* was the last great movie epic. Banners and laser light shows may soon give way to a more mundane, mainframe-like upgrade process that has good and bad implications for corporate IS.

The change agent is the Internet and its ability to make software downloads practically free. Software vendors are gearing up to take advantage of this. Microsoft says its much-delayed Cairo operating system won't be released as a product but will trickle out in updates in the next few years.

In fact, a fairly radical new feature for Windows 95 — a browser integrated with the Windows file manager — will be released as a downloadable upgrade to Internet Explorer by early next year. Microsoft corporate customers already can buy subscriptions to regular software updates.

Now Apple has scrapped plans to ship its Copland operating system as a blockbuster new product. Instead, the company will release incremental updates every six months or so. Apple already lets customers download Mac OS upgrades from the Web. Netscape, of course, has done this from Day 1.

Vendors will deliver software upgrades over the Internet because they can. Posting updates online cuts the cost of distribution, disk duplication and packaging to near zero and eases the pressure on developers to rush products to market to meet marketing deadlines.

For most IS managers, this is a pretty good deal. No more waiting a year for some important new feature if it's ready earlier. No more fumbling with floppy disks; users just connect to a Web server and download the latest and greatest.

Whoa. Wait a minute. Are you *sure* you want users doing that? Any IS person who's supporting six different versions of Netscape Navigator in his company will tell you about the downside of software that users can update on their own. Without good communication between you and your vendor — not to mention restrictions on what users can do — the subscription model becomes just another installation headache.

Vendors are embracing software by subscription because the concept is in their best interest. Don't take this bait unless you're also sure it's in yours.



Paul Gillin, editor  
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## Letters to the editor

## IBM's Olympic feat

I'm very disappointed in *Computerworld*. In a recent edition, you branded the headline "IBM misses chance for the gold" [CW, July 29], followed by Mindy Blodgett's mudslinging-fest. Maryfran Johnson added to the misrepresentation when she couldn't help but kick Big Blue in her Editor's Note column.

I grant you, IBM did not perform to the degree it was touted, but give me a break. What it tried to do was enormous: to connect so many computers [and] interface more than 7,000 PCs, AS/400s and RS/6000s, not to mention more than a dozen separate news computers each running on various hardware and software.

This kind of thing has never been done. And although Blodgett buried it amidst the insults, the fact that IBM has created a "legacy infrastructure that can be used in Sydney [the site of the 2000 Olympics]" is an Olympic feat in and of itself.

Maybe IBM didn't earn the gold medal in this project, but it certainly doesn't deserve to be ashamed of its accomplishments.

Mike Jenkins  
mjenkins@ral.mindspring.com

## Start-ups do offer competitive pay

In "Sweet deals" [CW, July 29], you quote a recruiter as saying that start-ups offer "skimpy salaries and minimal benefits." That was true once but is far from true today.

Five years ago, an engineer in a typical start-up might earn \$60,000, and the corporate health policy was

## Jefferson might have wiggled out

I am positive that Thomas Jefferson would enthusiastically embrace today's electronic frontier as James Martin's article states ["Life, liberty and the pursuit of a home page," CW, July 29].

I believe Martin guesses wrong, however, if he thinks Jefferson would have been pleased by the allowance of indecent speech and other so-called "libertarian" aspects of the Internet.

Instead of pleasing Mr. Jefferson, I think he and his contemporaries would have been shocked out of their very powdered wigs.

John S. Lusk Jr.  
Fort Worth, Texas

"don't get sick." Today, that engineer earns more than \$100,000, and benefits include paid sick time, health and dental plans, etc.

As the CEO of a start-up, it is part of my job to create an attractive environment for all members of the team — and if we succeed, then the stock upside will be additionally sweet.

[But] one glaring way in which we still cannot compete with the big companies is in health coverage for unmarried domestic partners.

Apparently, the U.S. lacks even a single health insurer that has worked out that not everyone who has a dependent partner is married to that person.

Allan Lees  
President and CEO  
Softwire Corp.  
Larkspur, Calif.

## Marvelous Macs

Regarding *Computerworld's* story on potential x86 emulation in Apple System 8.0 ["Apple mulls radical shift," CW, July 29], it sounds like CEO Gilbert Amelio's motto might be "It's the hardware, stupid."

Let's say Apple succeeds in rolling full-speed x86 emulation into System 8.0. This would present the computer buyer with this choice: Buy a fast, competitively priced, rock-solid machine that runs Win/DOS/Mac/Unix native and is easy to set up, configure and add peripherals. Or buy a CISC-based Intel x86 box that runs only Win/DOS native, might have a recycled BIOS chip from somebody's laptop in outer Estonia and comes with a shoulder pad so frequent calls to manufacturers do not cause undue ergonomic trauma.

My guess is that most information systems managers would continue to choose the latter. It's better for job security. As a longtime Macintosh user, I can say there are no applications that interest me that are not available on my preferred platform. But enough copies of "SoftWindows" get sold that I suspect other users have other needs.

I have great confidence in Dr. Amelio — more than I have had in any previous Apple CEO.

Thomas Barta  
Evanston, Ill.

■ Computerworld welcomes comments from its readers. Letters should not exceed 200 words and should be addressed to Paul Gillin, Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.



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By Julia King and  
Robert L. Scheier

RASZKA



# Hybrid executives are finally erasing the

**D**eary beloved, we are gathered here today for some funerals. First, we're going to bury the CIO who spends all his time agonizing about whether to standardize on Novell's NetWare or Microsoft's Windows NT, instead of coming up with a way to slash product delivery times. Then, we'll get rid of every penny-pinching chief financial officer who would kill that strategic system just to shave short-term costs.

Oh, these people are still moving, breathing and drawing paychecks. But they're professionally dead. They aren't getting the highest signing bonuses or the chance to work on the hottest projects. They're being replaced, or already have been replaced, by a new breed of business/technology manager who spans both worlds as a natural function of showing up at work every day. Their job isn't to push agendas or defend turf in either area, but to deliver benefits to their company and its shareholders.

Pundits, consultants and nags in the trade press have been preaching this gospel for years. Today's news is that real people are bridging the technology/business gap, and their careers and employers are benefiting mightily. It takes common sense, political savvy and hard work to understand the implications of business and technological changes as they affect your organization.

The best way to learn how to do this isn't through cookie-cutter recipes, but by watching how three successful managers bridge technology and business to make life miserable for their competitors.



# line between business and technology



## Orville A. Bailey

**Director, purchasing and supplier management solutions  
General Electric Information Services (GEIS)  
Rockville, Md.**

Orville A. Bailey's specialty and passion is applying technology to business problems.

The first seeds were planted when he heard John Sculley give a lecture at the Harvard Business School about the limitless potential of information systems.

Ever since, technology and strategy have been inextricably linked for the 33-year-old business strategist.

His primary job these days is commercializing the Trading Process Network (TPN), a procurement system he helped develop as a member of a corporate strategy group at General Electric Co. in Fairfield, Conn.

Yet this hybrid business/technology manager is neither a computer technician nor

an IS executive. Bailey was first trained as a mechanical engineer before he moved to study business at Harvard and later to the Boston Consulting Group. Before joining GEIS in January, he was one of several strategists and IS experts to collaborate on the TPN.

In fact, one of the primary things that attracted him to GE is the company's commitment to mixing business and technology experts so they can capitalize on each other's talents.

For example, the head of the corporate business development group, in which Bailey worked before joining GEIS, is also the chief information officer. The CIO, in turn, reports directly to GE's CEO, Jack Welch.

This unusual approach mirrored Bai-

litude is OK, go do it."

For example, it was during TPN testing that Bailey and other strategists/technologists suggested the trading network could run on the Internet, rather than GEIS' value-added network, as a commercial service.

TPN initially was conceived as a virtual electronic marketplace that GE's 13 decentralized business units would tap into to buy and sell goods from suppliers also linked to the network. Previously, the various divisions bought their goods independently. In the process, they lost out on opportunities for high-volume discounts.

GE developed the TPN to solve the problem. GE and about 1,000 trading partners last year bought and sold \$250 million in goods over the network. Now, Bailey is leading

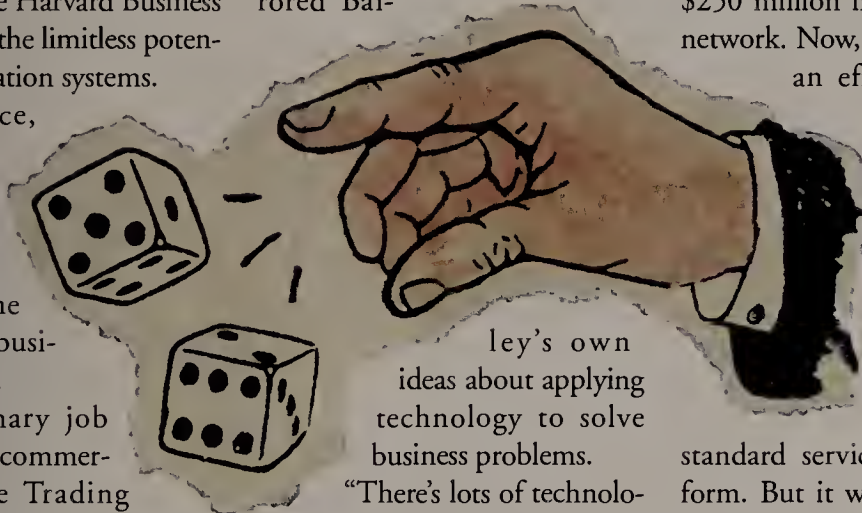
an effort to roll out other electronic supply chain services to outside customers.

As a technologist, Bailey recognized the Internet as a standard service delivery platform. But it was as a strategist that he saw the standard as a means to deliver TPN services beyond GE and to generate new revenue.

As a person, Bailey says, "I'm fundamentally a believer that technology can impact not just the way we do business, but our entire lives."◆

**"There's lots of technology out there, and you can surround yourself with talented people who know about it. But the real value in technology is in applying it."**

*Orville A. Bailey  
General Electric  
Information Services*



ley's own ideas about applying technology to solve business problems.

"There's lots of technology out there, and you can surround yourself with talented people who know about it," he says. "But the real value in technology is in applying it."

And GE's corporate culture is one that supports and encourages doing just that, he says.

"If you have an idea, the at-







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# "There's got to be an understanding of



## Ed Vaccaro

**Chief information officer  
Booz Allen & Hamilton, Inc.  
McLean, Va.**

As CIO, Ed Vaccaro's job is to ensure that Booz Allen & Hamilton's 6,500 consultants worldwide have instant and easy access to the information they need anytime, anywhere.

To get it done, Vaccaro, who came to the post last April after 15 years as an information management consultant, spends about 20% of his time on the road doing what his users do. He works with clients.

"The biggest asset we have as a company is intellectual capital," the 40-year-old Vaccaro says. "My basic job is running the infrastructure factory that makes that asset available."

"There's got to be an understanding of what people do for a living," he says. Getting out on the road is the best way to figure out which technologies help them, which ones don't and which ones could work better, he says.

The other 80% of the time, you might find Vaccaro run-

ning a meeting of the board of directors or attending a briefing on new commercial telecommunications service offerings.

With the help of more technology-oriented managers, Vaccaro keeps informed about the latest technological developments. But he doesn't get enamored. Instead, his primary focus is figuring out specifically how new technologies can be of strategic value to the firm.

How, for example, can Integrated Services Digital Network (ISDN) bolster access to the information and experience carried around in the heads of its consultants?

The fact is, ISDN couldn't do it as well as the intranet technology Booz Allen ultimately implemented to build its Knowledge Online system.

This system lets consultants worldwide search a database of the firm's project reports and determine who worked on the project and their expertise. Consultants use the system to locate experts in specific areas and develop more accurate proposals for new projects based on cost data and other information kept online.

ISDN, on the other hand, proved to be the most cost-efficient technology to deploy voice and data communications capabilities, including electronic mail and Internet access, to consultants working at client sites.

Vaccaro says that knowing from experience how consultants work in the field helped him and the firm's chief knowledge officer, with whom he works closely, implement the most appropriate technologies to meet these two key needs.

"Most IS managers come from either the technology side or the development side and rarely get true exposure to the business they support," Vaccaro says.

Their primary focus is "all of the trappings of the IS environment, as opposed to what's needed to make the stuff give value back to the business that's paying for it," he says.

Vaccaro has three pieces of advice for managers:

First, "Find yourself a mentor from the business side, someone you can bounce ideas around with," he says.

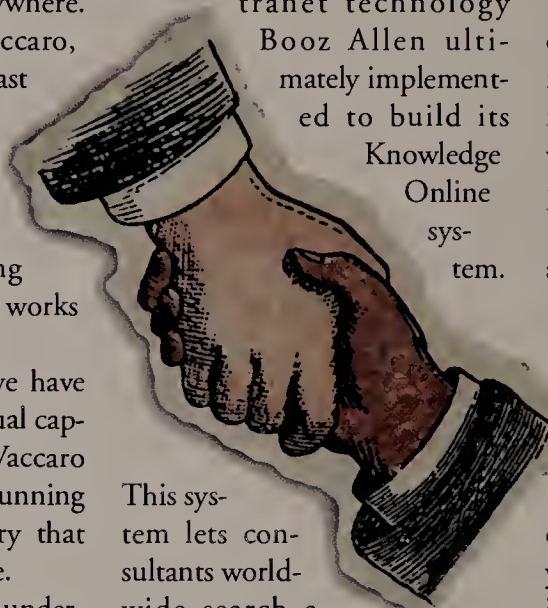
Second, find a visible project and complete it fast. "Once you deliver it, you'll start building up credibility."

Third, and perhaps most difficult, forget about job preservation.

"My own goal is to work myself out of a job," Vaccaro says. "If you spend your career protecting your job, you're going to fail because you're focused on the wrong thing." ♦

**"The biggest asset we have as a company is intellectual capital. My basic job is running the infrastructure factory that makes that asset available."**

*Ed Vaccaro  
Booz Allen & Hamilton*





what people do for a living.” — Ed Vaccaro, Booz Allen & Hamilton



## Charles Kirk

Senior vice president, chief  
information officer  
Fruit of the Loom, Inc.  
Bowling Green, Ky.

Charles Kirk spent 14 years building financial applications, data networks and custom distribution services at FedEx Corp., where information and information systems were an integral part of the delivery service's competitive edge. Now, Kirk's trying to bring the same mix of business and IS savvy to a traditional manufacturer, Fruit of the Loom.

Decisions at FedEx were driven by "a very simple leap of faith on the part of senior management that information about your service was at least as important as the service itself," says the 48-year-old Kirk. If a package was delayed, the fact that FedEx could find it and predict a new delivery time calmed customers who otherwise would be frustrated and annoyed.

Kirk says among the lessons he learned was to look at IS projects as "a business deal, not strictly a technical project," to the

point that business users must help compute the benefits of new systems.

Kirk is preaching the value of information to a company that considers itself a manufacturer of clothes, not data. "We produce cotton yarn and knit cloth at a cost nobody else can touch," Kirk says. But Fruit of the Loom hasn't done as good a job cutting costly inventory out of the production and supply chain. The usual process is to "sew stuff in Taiwan six months ago, push [it into the market] and wonder whether it will sell," Kirk says.

"You've got to invert that and say, 'Whatever's selling, you should be making.'" To do that, Fruit of the Loom this year is fielding new systems for functions such as product planning and distribution management.

Since joining the firm 14 months ago, Kirk has helped develop a World Wide Web-based order-entry system that Fruit of

the Loom gives to some of its largest distributors. The site, which links to Fruit of the Loom's order-entry and pricing systems, lets distributors sell items such as T-shirts and sweat-shirts to "screen printers," who add decorations such as team logos. The first distributor to use the site has reported twice the volume of orders than expected.

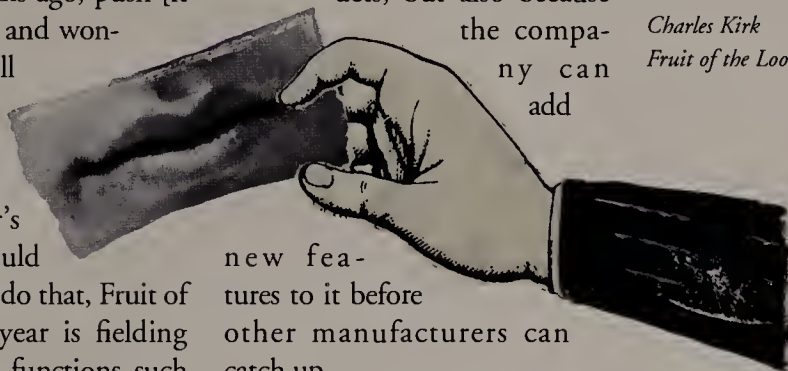
The site is strategic, not only because it helps distributors sell more Fruit of the Loom products, but also because the company can add

new features to it before other manufacturers can catch up.

"It's our goal to repeatedly raise the bar on the competition just before they reach our current level," he says. "Why would your customers go fooling around with anyone else?" ♦

**"It's our goal to repeatedly raise the bar on the competition just before they reach our current level. Why would your customers go fooling around with anyone else?"**

Charles Kirk  
Fruit of the Loom



### About the Authors

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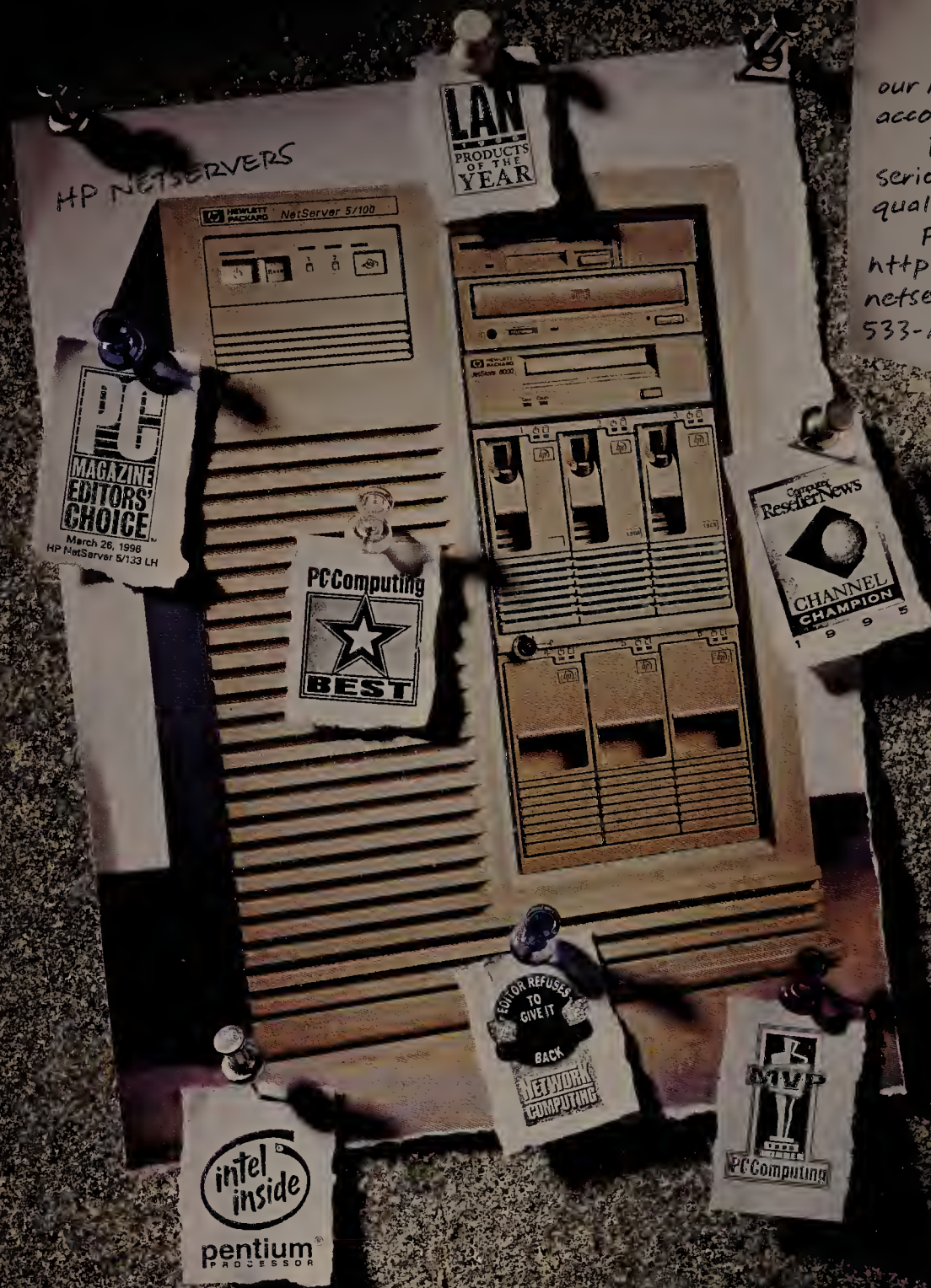


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## Verbatim

FROM A REPORT BY DAVID  
GOODTREE, AN ANALYST AT  
FORRESTER RESEARCH, INC.  
IN CAMBRIDGE, MASS.:

The global carrier alliances involving [telecommunications] titans such as AT&T, MCI, British Telecommunications and Deutsche Telekom are falling far short of their objective — to become reliable one-stop shops for Fortune 1,000 global voice and data networks.

[Business customers] told us a slew of horror stories about unresponsive carriers, endless installation snafus and lack of service availability in the last kilometer. Until alliances [such as] Concert, WorldPartners and GlobalOne can provide ubiquitous, uniform quality services worldwide, big business customers will remain unsatisfied.

But [the silver lining is that] the global alliances will drop prices precipitously, stuff their networks full of features and act as a single point of contact.

Despite the global alliances' shortcomings, companies should sign up with one of them anyway. Performance may be subpar at times, but at the very least, customers can walk away with a global discount.

As a result of new technologies, falling regulatory barriers and upstart entrants, the global telecom market will be increasingly fluid. Businesses should insist on flexibility clauses in their carrier contracts — such as reserving the right to switch from a monopoly provider to a new local competitor — to take advantage of the changing market dynamics.

.....  
FROM A BULLETIN BY ALEXIS  
DEPLANQUE, AN ANALYST AT  
META GROUP, INC. IN STAM-  
FORD, CONN.:

Users should delay acquiring data mining products until they properly scrub and model their data. This will push most applications into the second half of 1997.

# The 7 bad habits of IS buyers

.....  
*Ed Muldoon*

**W**hen IS projects go bad, the finger of blame usually points to the vendors — those greedy hypemeisters who oversold the technology.

But just as often, the finger should point at the corporate IS professionals who hear what they want to hear and make misguided buying decisions. I'll never forget the Midwest manufacturing firm that bought a single copy of an early computer-aided software engineering tool and was surprised to find that actual programming was still required.

Then there was the state department of motor vehicles that selected what was essentially a fourth-generation programming language product to develop a high-volume transaction-processing system. The system's sluggish response times rendered it virtually useless. (It produced nice reports, though.)

## When decisions go bad

Why do even the best IS organizations, which are adept at understanding the latest technologies, often end up with such spectacular failures? Here are some clues:

1. They don't understand the business drivers for the system and can't distinguish between technical requirements and business issues. A faster graphical user interface isn't the automatic



IS staffers are untrained, part-time buyers. That makes them easy prey for wily vendors.

answer to a business' time-to-market problem, for example.

2. The IS department's part-time buyers ... untrained in software acquisition — are overmatched by the full-time, trained sellers. Despite the cost, time and impact of software development and purchases on an organization, procurement skills haven't gotten the attention they deserve.

3. They issue misguided requests for proposals (RFP). Many RFPs are merely laundry lists of appealing bells and whistles that have little to do with real business needs. They may actually mask real business needs or prematurely reject viable vendor solutions. RFPs are also fair game for personal bias and undue vendor influence.

4. They fail to plan for future business needs. You've heard the story: Management loves the new departmental application, which was written using a desktop tool. Now they want to roll it out

nationally and link it to an IBM DB2 mainframe database, but it can't be done. Scalability has become one of the most critical issues for client/server success.

5. They fail to consider *all* of the factors involved in a successful system rollout. Client/server seemed like a great way to cut high mainframe costs, until the bills began arriving for upgrades to the network, hardware and software infrastructure as well as training and end-user support.

6. They fail to plan for the continuous, accelerating change in technology. Five-year plans don't work anymore. IS needs to plan at the outset for the possibility of changing standards, architectures and interfaces in addition to unforeseen breakthrough technologies. Even Microsoft was caught napping by the emergence of the Web.

7. They fail to review and improve the software acquisition process. The success or failure of the system will eventually become clear. But it is very rare for IS organizations to study how an acquisition was conducted to look for lessons that can be applied to future procurements. As philosopher George Santayana said, "Those who cannot remember the past are condemned to repeat it."

Muldoon is president of Software Decision Consultants in Chicago. His Internet address is 73423.1010@compuserve.com.

# Feeling more secure about intranets

.....  
*Richard Finkelstein*

**S**ecurity is on everyone's Top 10 list of concerns about intranets. But is it overdone? Security is important for every system, but compared with where we are coming from — the PC/LAN client/server environment — intranets may be a major step forward.

Because the intranet model puts applications and data on a centralized Web server instead of desktop PCs, it is a straightforward problem to secure these resources from unauthorized access and use. We have been securing centralized data for the past 25 years, and we have gotten pretty good at it.

Mainframes are especially good at this. On IBM's MVS platform, there is a slew of security products, including the Resource Access Control Facility, CICS and DB2 Data Control Language. IBM's AS/400 has similar security measures built in to its OS/400 operating system.

If those protective measures are adequate for your systems, then you shouldn't fret about intranets. Nothing has changed. The same security products that have been used for the past two decades can be leveraged to protect intranets. Intranet applications must still travel through these walls of security to access the corporate mother lode of data.

There is one problem, however. The introduction of Web servers creates a buffer between the



Compared with the security nightmare of client/server, intranets are easily protected.

security software and the resource user, and it could potentially hide users from the security software. To maintain the same level of security, companies such as IBM are building desktop connectivity software for Web browsers — CICS Java Connection, for example — that will connect users and terminals directly to transaction managers and allow products such as CICS to enforce security at the highest possible levels.

If you're concerned about weaknesses in your operating system — Windows NT comes to mind — then maybe you should reconsider your choice of platforms. If the operating system platform is satisfactorily secure, then an intranet doesn't make it any less secure. In fact, in all cases, it makes the system more secure.

If you really want to lose some sleep over security, then look no further than your nearest client/server application. During the past 10 years of client/server deployment, data and appli-

cation software have been slowly migrating from secure platforms onto relatively unsecured desktops and distributed servers. The idea was to move data out of the "glass house" and those nasty mainframes. Mission accomplished. Now data and applications are all over the place and very susceptible to tampering and unauthorized access.

The security and administration problems associated with distributed databases, servers, desktop data and desktop-deployed programs are so huge that no one wants to think about them, much less solve them.

## Intranet security blanket

In comparison, intranet security is a slam dunk and light years ahead of the almost-nonexistent security in the PC/LAN client/server architecture. It is much easier to secure a centralized Web application server, which can be surrounded by walls of protection, than it is to guard hundreds or thousands of dispersed servers.

This isn't to say that intranets offer a security panacea. But the return to centralization has its benefits. If you were satisfied with client/server security, you should be ecstatic about intranet security.

Finkelstein is president of Performance Computing, Inc., a consultancy in Chicago. His Internet address is finkel@links.com.



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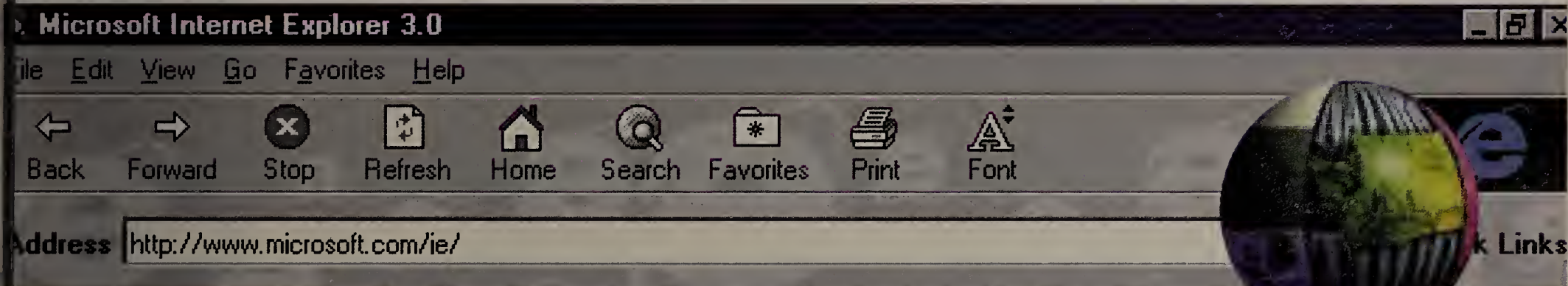
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# Servers & PCs

## A moving experience

Relocating a data center with six hours of downtime

By Michael Goldberg

Relocating Cincinnati Bell Information Systems, Inc.'s (CBIS) data center in Florida took 10 miles, 11 months and trillions of details.

CBIS, a customer-billing outsourcer that caters to the cable television and wireless telecommunications industries, recently relocated its IBM System/390-heavy operation — plus 5.5T bytes of client data — from Maitland, Fla., to a larger facility in Orlando, Fla.

Growth prompted the 10-mile move, but it took a small army of information systems staff, 11 months of planning and testing and a key remote data-transfer technology to pull off the move with only six hours of downtime on a Sunday morning, said David King, vice president of computer operations at CBIS.

"Our goal was to do this without interruption to our clients," King said.



**CBIS' David King:** "Our goal was to do this without interruption to our clients"



**Tape silos** from Storage Technology Corp. were some of the hardware CBIS had to replicate at its new data center in Orlando

### T3 ring

CBIS saved time by building a communications ring of T3 lines between its old and new data centers — after the new Orlando office had duplicated the old facility's 1,100 MIPS of mainframe processing capability and 7T bytes of storage capacity.

After the storage and communications lines were in place, CBIS used Symmetrix Remote Data Facility (SRDF) technology from EMC Corp. to move data, King said.

The SRDF software on Symmetrix 5500 storage subsystems allowed CBIS to make duplicate images in Orlando of 5.5T bytes of data stored in Maitland. And the outsourcer was able to do all this without having to use mainframe processors.

That saved time, King said, because CBIS didn't have to copy that data onto tapes and haul them down Interstate 4.

John McArthur, an analyst at International Data Corp. in Framingham, Mass., said technologies such as SRDF and Extended Remote Copy from IBM "have come into their own in the last year or so."

More IS managers are using wires to move

data instead of using planes, trains or trucks that could damage delicate cargo.

Hitachi Data Systems Corp. has also announced plans to offer this technology, he said.

Besides making it easier to move data centers, this capability helps companies keep two synchronized copies of important data in separate sites within 43 kilometers of each other.

### Sticking point

While not usually an issue with data center moves, delays in transmitting data over communications lines make whole backup strategies over long distances typically unreliable, McArthur said.

Besides its System/390s, CBIS uses mainframes from HDS and a host of Unix, AS/400 and Digital Equipment Corp. VAX minicomputers, King said. The company also uses networking hardware from IBM and Cisco Systems, Inc.

During testing, the facet of the project that gave King's staff the most headaches was keeping up with software installations at the data center and its customer sites. The Maitland and Orlando data centers operated concurrently for 60 days before the Orlando site went live in June, King said.



**CBIS' new data center in Orlando is fortified by concrete walls designed to withstand twister-like winds of 120 miles per hour**

## Intel delays debut of MMX chip to spur graphics tools

By Bob Francis

Intel Corp. doesn't want no-shows at its multimedia Pentium party, so it is delaying the chip until the first quarter. The company hopes that by then, software developers will have written snazzy graphics applications that exploit the chip.

The delay should have little effect on corporate users because early versions of the chips were designated for high-end consumer systems, analysts said.

Intel's P55C chip, called MMX, is a new version of the Pentium. It can process multimedia instructions two to four times faster than standard Pentiums can, analysts said.

### New-year babies

Officials at Intel in Santa Clara, Calif., said the new Pentium processors, which were expected to be available in limited quantities in the fourth quarter, will be introduced in the first quarter next year, along with MMX versions of the Pentium Pro and mobile Pentiums.

Corporate users may not feel the effects of the delay, but they are finding uses for multimedia PCs. "We developed our Olympic kiosk using standard PCs because the technology was included with the systems," Intel, page 41

### Intel's first-quarter chip parade

Delay pushes delivery of MMX systems into next year

Desktops based on these processors will be available in the first quarter:

- Pentium MMX
- Pentium Pro MMX

Portables will be available in the second quarter:

- Pentium mobile MMX notebooks

Source: Intel Corp., analysts

## NCR scales up its servers

By Jaikumar Vijayan

Some vendors are accelerating their efforts to equip Windows NT-based PC servers with capabilities that would make them more appealing in performance-intensive application environments.

For instance, NCR Corp. recently announced several interlinked products that significantly improve the scalability of its servers that run Microsoft Corp.'s Windows NT. The products include the following:

- An advanced memory controller technology, Octascale, which lets users convert a four-processor Intel Corp. Pentium Pro-based server into an eight-processor symmetrical multiprocessing (SMP) system simply by adding a four-processor board.
- SMP Utilization Manager, a software product designed to improve the scalability of a Windows NT operating system beyond eight processors.

The company also recently introduced eight-processor and 16-processor WorldMark SMP servers based on Intel's high-end 200-MHz Pentium Pro chip with a 512K-byte cache.

NCR, page 41



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# Universal Servers

*RDBMS Technology for the Next Decade*



A Computerworld Custom Publication



## *Introduction*



# Rebirth of the RDBMS

So elegant is the relational database management system (RDBMS) model that it has survived for 20 years, focusing on simple types of data: integers, scientific floating point, character strings, date/time and money.

However, the business world is not nearly as simplistic as it once was, and as a result, the RDBMS model has been pushed beyond its 20-year-old design capabilities. The need for data management solutions accessing complex data — in data warehouses, Web pages or competitive-advantage applications — is exploding. And if RDBMSs have one drawback, it is that they do not handle highly complex information well.

Because the RDBMS understands only simple types of data, it is under considerable technology pressure — from innumerable real-world applications that demand more information from the data.

A solution to the challenge facing RDBMSs — extensibility — is arriving in the form of the Universal

Server. The Universal Server will allow IS organizations to extend their current RDBMSs so that they can handle complex data types and work better with new technologies such as Intranets, relational OLAP and the latest development toolsets — ensuring that enterprises can continue to leverage their existing investments in RDBMSs.

Universal Servers will allow IS organizations to extend their existing RDBMSs with complex data, functions and access techniques. And once ISVs create cross-industry and vertical-market-specific data extensions, IS will have more options for buying relatively inexpensive, reusable components instead of employing scarce database-programmer resources.

The Universal Server will be one of the most significant advances in RDBMS technology over the next decade. In this White Paper, Aberdeen Group looks at the short- and long-term benefits this technology holds, and will explain why it considers the Universal Server “the rebirth of the RDBMS.”

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This White Paper was written by Peter S. Kastner and Wayne T. Kernochan of Aberdeen Group Inc., a market research firm in Boston. Mr. Kastner — Group Vice President of Aberdeen, and general manager of its commercial systems practice — is a leading analyst of trends in databases, OLTP, decision support, client/server architectures, distributed commercial systems development and commercial benchmark auditing and analysis. He also conducts consulting studies in distributed systems planning, database management software and Internet/Intranet issues for both buyer and supplier organizations. Mr. Kernochan, as Vice President of Commercial Systems Research, implements Aberdeen's Buying Guides for distributed, open RDBMS and client/server application development environments, as well as consulting projects for Fortune 1000 clients and product vendors. He has 12 years of experience in DBMSs, network operating systems, office automation, and E-mail for mainframe, midrange, Unix and PC LAN environments.

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# Universal Servers

## RDBMS Technology for the Next Decade

**T**he most serious challenge so far to the supremacy of RDBMSs in managing data is the increasing need of enterprises for complex and function-related data. An enterprise RDBMS hits the wall when all data must be expressed in RDBMS terms as simple data types.

Technology trends demand more complex data types, which RDBMSs support either with difficulty or not at all. Relational OLAP asks for large-scale multidimensional and time-series data. Internet and Intranet implementations demand text and graphic data types that RDBMSs have not fully integrated with their traditional numeric data. Object-oriented and client/server development toolsets fit best with data management systems when those systems provide high-level data types plus data "encapsulated" with the functions that operate on it.

In short, IS has pushed the RDBMS model beyond its 20-year-old design capabilities. Aberdeen Group believes the best way to extend installed RDBMSs is to add support for complex data types, creating a Universal Server — an RDBMS that allows users to access complex data types (including functions related to particular data types) and to

support open, extensible user-defined data types.

The key word in this definition is "open." For years, RDBMS vendors have offered proprietary add-ons which gave users incremental capabilities but did not let them extend the database to understand the data formats, functions or complex queries of their own industries . . . or even their own enterprises.

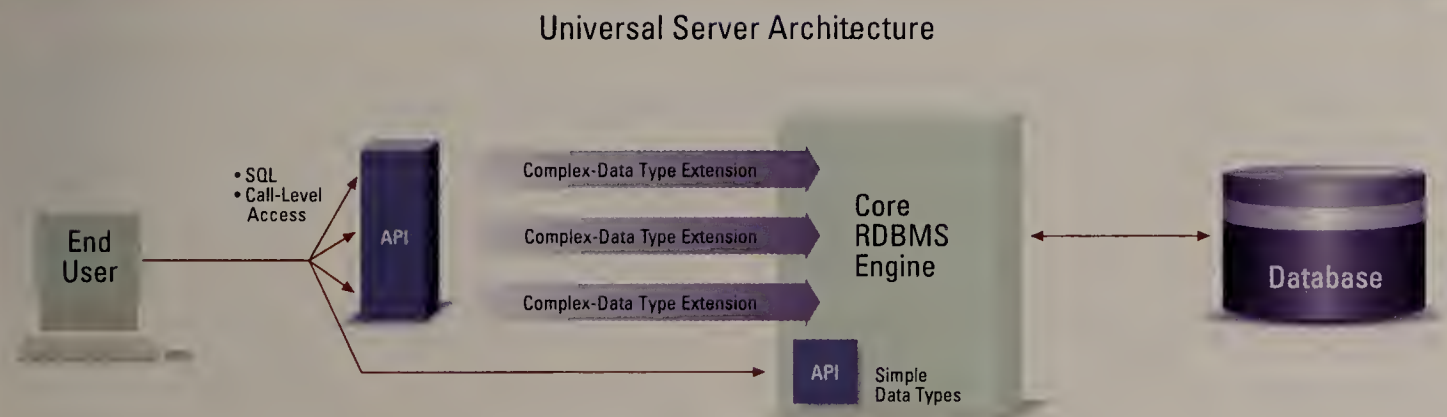
In contrast, the Universal Server architecture lets IS "have it your way." By promoting present and future "your way" extensibility, this architecture ensures a framework for customizing an RDBMS to its specific application mission, such as Internet OLTP.

Also, the Universal Server architecture does not require major rewrites or upgrades to current systems. Because IS simply adds new capabilities for complex data types to an existing RDBMS, the effect on a production system is minimal, and IS has full control over how much and how rapidly it takes advantage of the new functions. Figure 1 shows a typical Universal Server architecture.

### What Universal Servers add

Universal Servers deliver the following seven new or upgraded capabilities to an enterprise RDBMS:

FIGURE 1

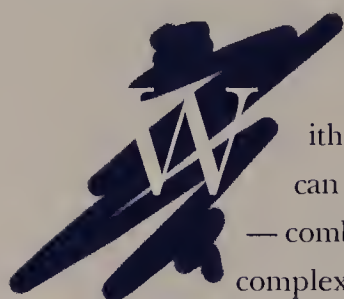


Source: Informix Software and Aberdeen Group, June 1996

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1) *More support for complex data types*, via specific operations (e.g., search a video archive for a visual pattern) and storage of new types of data (e.g., multidimensional, text, multimedia or spatial). Many applications can benefit from having data in the right form for the application, as well as for the application user. For instance, a text-search capability applied to a comments field can extract repeated information that cannot be extracted by current RDBMS query capabilities.



With Universal Servers, enterprises can have their cake and eat it too — combine Web content that is rich in complex data types with highly scalable RDBMS technology.

2) *More support for complex operations on simple and complex data types*. Support for more complex functions is built into Universal Server extensions. For example, by including statistics and mathematics libraries in the core RDBMS, users of decision support systems will be able to perform complex data analysis without reinventing the wheel.

3) *More efficient high-level data access and computation*. Tuning the Universal Server's query optimizer for particular types of complex data can vastly improve querying speed on those data types. Likewise, complex computations such as pattern matching and economic-order-quantity functions scale better.

4) *Better fit with today's development tools, development processes and GUIs*. Even though development tools and processes operate at a high level on objects, components and templates (and layer higher level constructs on top of base components), most developers must still program RDBMS access at the simple-data level. Similarly, data-displaying GUIs based on object-oriented technology must link to crude relational data items. Because Universal Server programming interfaces operate at the same high level as advanced development toolsets, programmer productivity on large-scale data-intensive applications can be vastly improved.

5) *Better fit with Internet/Intranet architectures*. Enterprises scaling their Internet and Intranet architectures and connecting them to back-end databases face difficulties merging text- and multimedia-heavy Web pages with simple-data RDBMSs. With Universal Servers, they can "have their cake and eat it too" — combine Web content that is rich in complex data types with highly scalable RDBMS technology.

6) *Effective ROLAP support*. As data miners drive deeper into ever-larger data warehouse databases, requirements for complex data types translate into a need for more complex queries. The bit-mapped indexing, star schemas and aggregation support of today's Relational OnLine Analytic Processing (ROLAP) and RDBMS suppliers can deliver order-of-magnitude improvements in the speed of complex queries, but further improvements require that multidimensionality, aggregation and time-series support be driven farther into the RDBMS core — particularly into the query optimizer.

Thus, Universal Server support for multidimensional and time-series complex data types allows designers of data warehouses and developers of querying applications to take advantage of new complex-query speed-ups. Moreover, it incorporates multidimensionality in the core RDBMS, with significant performance advantages over approaches using separate OLAP engines.

7) *Most important, the Universal Server adds extensibility to an RDBMS*. The Universal Server's open support for user-defined data types gives IS far more flexibility to adapt to changing user demands and to technologies requiring new data types. Moreover, RDBMS makers and VARs now have the opportunity to deliver customized and vertical-industry-specific modules supporting complex data types.

#### Business benefits of a Universal Server

"What are the 13-week average sales for our top five profitable products?" Business managers asking this simple question do not know that to implement it, an RDBMS programmer must churn out and test several pages of SQL code to first calculate the profitability of products, then rank them by profitability, and then calculate the 13-week average sales. Nor do they realize that the query must be reworked the

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following week. The 13-week average changes every week, but because the RDBMS does not understand time series, moving averages or ranking, the programmer must force-feed it with a program embodying these "complex data types."

Universal Server ROLAP extensions that define functions for ranking, profitability and time series will make the programmer's job simpler and will result in much smaller programs that are more likely to be error-free. They will also make it easier for users with desktop query tools to express their data needs in terms much closer to business reality, fostering faster "data knowledge" activities by users.

However, the long-term benefits of Universal Servers will be even more significant, since they will apply to commercial applications in nearly all industries. For example, exploding bill-of-materials and calculating economic order quantities are difficult tasks with today's RDBMSs. But with Universal Servers, they will be relatively straightforward, allowing more effective just-in-time resource planning.

Enterprises will also be able to query their videotape records and onsite-camera video feeds for particular patterns. For example, video cameras monitoring an assembly line can feed video data into a Universal Server database that can detect anomalies such as defects and trigger corrective action, thus improving product quality at lower cost.

Figure 2 lists other opportunities for companies implementing Universal Servers.

#### Informix's role

With its acquisition of Illustra, Informix has become the leader in Universal Server technology. It can now combine its scalable Informix-OnLine architecture with Illustra's DataBlade modules (add-ons that support complex data types). Full integration between the two is scheduled for year-end.

Informix plans on releasing 25 DataBlade modules by year-end, covering data types such as text, video, ROLAP and spatial, as well as specific functions such as banking.

The currently available INFORMIX-Universal Server development toolkit provides a debugger and a class library for data access tools, and support for C-language functions. In the future, users will be able to take advantage of Informix's NewEra development toolset, but today they can already partition DataBlade components between client and server. VARs and power users can develop their own DataBlade modules, ensuring that IS can exploit industry- and application-specific database extensions.

Informix is also adapting key features of its core architecture. For instance, extending its query optimizer to handle complex queries and complex data types at a higher level should add complex-data-type performance scalability to an Informix-OnLine architecture already regarded as a leader in parallel scalability. Also, supporting complex data types across the Informix architecture should lead to exceptional support in its administrative toolsets

FIGURE 2

#### Examples of Opportunities for Universal Servers

| Area                   | Opportunity   |
|------------------------|---|
| Financial/Insurance    | Derivative calculation, quantitative-model scaling, actuarial tables, currency conversion                       |
| Manufacturing          | Bill-of-materials explosion, economic order quantity computation  |
| Healthcare             | Treatment coding hierarchies, image and document management   |
| Data Warehouses        | Aggregates, time series, business-model-based data mining   |
| Sales and Marketing    | Geographical, spatial, and demographic (e.g., sales by area) data, customized multimedia demos                  |
| Security               | Monitoring video cameras for changing patterns  |
| Entertainment Industry | Querying videotape archives, retrieving live-broadcast material for immediate playback, supporting pay-per-view |
| Pharmaceutical         | Molecular modeling and computational chemistry  |
| Communications         | Parsing telephone numbers, decoding IP addresses (e.g., for the Internet)                                       |

Source: Aberdeen Group, 1996

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## Picking the right Universal Server

Aberdeen Group recommends two yardsticks for determining how well RDBMS suppliers have implemented Universal Server technology.

1) Degree of extensibility/flexibility. A Universal Server should provide an architecture for extensions that handle a range of common or important data types. It should also allow IS to define custom data-type extensions ("user-defined data types") for particular industry or en-

terprise needs, e.g., a data type related to a business process. It should also supply flexible development tools and APIs or class libraries that support high-level data access and integrate well with an enterprise's other server-side development tools. Ideally, the architec-

ture will coordinate the many extensions and permutations needed to meet real-world application requirements.

2) Integration of Universal Server technology with the main components of the core RDBMS engine. Applying the scalability, support of distributed databases, and open flexibility of today's high-end RDBMSs to complex data types requires that each core-engine element support

tration and transparency.

How much does the high-level "veneer" with which a Universal Server surrounds a complex data type slow performance? How well do RDBMS scalability techniques such as cost-based optimizers and parallel-scalable technology translate to new data types? No RDBMS benchmark can yet measure Universal Server performance in real-world customer situations. For now, enterprises should create their own benchmarks based on their own complex data types.

A Universal Server administration tool should extend today's RDBMS and systems management tools to provide a view of, and allow operations on, the overall complex data type and its simple-data-type components, as well as the relationships between components and the functions associated with the data type. For complex data types (some of whose components are on different databases within a distributed database), an administration toolset should provide both a global view and a single-database view.

The Universal Server should provide either the same or similar operations on complex data types as on today's simple data types (e.g., insert, delete, join); a similar look-and-feel for data display; and APIs or class libraries that do not require a migration effort for existing RDBMS-based applications. This "overloading" will allow enterprises to reuse code for new data types without major rewrites.

FIGURE 3

### The IS Buyer's Universal Server Checklist

#### Is it a Universal Server?

- Does it support the major complex data types (e.g., text, video, audio, image, and spatial)? In particular, can it accept new indexing methods for new data domains?
- Is it extensible, e.g., via user-defined data types and open APIs?
- Is it integrated with a distributed, open, scalable RDBMS (e.g., does it offer parallel scalability and replication technology for distributed-database support)?

#### How Effective a Universal Server is it?

- Is it architected to be highly extensible and flexible, via a wide range of complex data types supported, with powerful development tools to create further extensions and with broad third-party and VAR support?
- Is the technology driven deep into the architecture — for instance, does the query optimizer understand specific complex data types and what to do with them?
- Does it deliver high performance and scalability for the complex data types that the enterprise needs?
- Do development and administrative tools support complex data types?
- Can RDBMS data-access operations (e.g., join) be applied across data types?

Source: Aberdeen Group, 1996

terprise needs, e.g., a data type related to a business process. It should also supply flexible development tools and APIs or class libraries that support high-level data access and integrate well with an enterprise's other server-side development tools. Ideally, the architec-

ture will coordinate the many extensions and permutations needed to meet real-world application requirements.

When it comes to assessing a Universal Server, there are three other factors: performance, adminis-

### UNIVERSAL SERVERS



and "overloading" across DataBlade modules. Finally, these architectural changes will allow SAP, PeopleSoft, Baan and other vendors to migrate their client/server applications to Informix's Universal Server without application code changes.

#### Universal Server competitors

Oracle has folded its Video Server, ConText and Spatial Data options into Oracle7.3. The Video Server database is separate; the ConText text database (an extension to 7.3), merged with Oracle7's simple data, is slated to ship soon. Oracle's Developer/2000 toolset provides a server-side toolkit for multimedia data types, but these complex data type extensions are still distinct database servers, neither fully integrated with Oracle7 nor highly extensible. For more extensive integration and user-driven extensibility, customers will have to wait for the company's "object" release, Oracle 8.0, in 1997.

IBM's DB2 Common Server (for OS/2 and Unix

platforms) offers functions to access parts of a data type, as well as the ability to insert a data type too large for main memory into the database. DB2 also includes bundles of triggers, user-defined data types and user-defined functions for particular data types called Relational Database Extenders (e.g., a text, imaging, audio or video server). These Extenders will support fingerprint analysis and querying by SQL of image content (color, shape or pattern).

In the long term, the text Extender may prove particularly valuable, because it includes information retrieval technology. However, IBM has not yet driven this support for complex data types deep into the DB2 architecture. Nor are Extenders yet included in DB2 Parallel Edition or DB2/MVS.

Computer Associates' dual-database strategy includes CA-Ingres and Jasmine, an OODBMS with a multimedia- and Internet-enabled toolset. CA has no plans to combine the two or to otherwise offer Universal Server functionality. Nor has CA fully integrated extensibility of complex data types into CA-Ingres or driven it into the architecture.

Neither Sybase nor Microsoft yet offer support for complex data types comparable to Informix, although Sybase has announced that, to allow ISVs to link snap-in complex data types with SQL Server System 11, it will provide an Adaptive Server combined with its ObjectConnect middleware.

#### Conclusion

Universal Servers will be the next big RDBMS technology wave. Enterprises can gain strategic advantage today by using Universal Servers for deeper data mining, multimedia Intranet and Internet architectures, developing large-scale applications, and adding complex-mathematics and data manipulation features to current customer-interface and back-office systems.

Long-term benefits, however, are likely to come from innovative functional or vertical-industry applications. To succeed in these, users should start learning the ropes in such areas as design, administration and scaling performance. As for IS, it needs to choose a Universal Server wisely, target strategic opportunities proactively, and begin planning and prototyping implementations immediately. ■

## Not enough OOmph

In the early 1990s, it seemed like object-oriented DBMSs might be the IS choice for accessing complex data. OODBMSs allow developers to handle high-level and complex data types, especially CAD/CAM graphics and text databases. But because they were created from the ground up, they lacked the advantages of RDBMSs that IS had come to expect: superb query capabilities with SQL; excellent OLTP performance; and an ISV industry providing complementary utilities and application solutions.

To match the scalability, flexibility and robustness of their relational counterparts, it was necessary for OODBMSs to implement multithreading and SMP support, distributed database features and open gateways from scratch. Unfortunately, they were, in effect, chasing a moving target from far in the rear. As a result, the market so far has decreed that OODBMSs are niche players, not yet appropriate for large-scale or mission-critical applications.



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# Videoconferencing connections

By Chris DeVoney

The boardroom meeting is increasingly giving way to the corporate videoconference.

Strained travel budgets, pressure to increase productivity and the need to rapidly coordinate critical projects among headquarters staff and far-flung employees offer real justifications for room-scale video systems in some organizations.

Getting the same benefits at the field office or at the individual desktop isn't difficult. But getting the full benefits at the desktop is more a matter of how you connect the systems than the cost of the equipment.

Room-size systems cost between \$27,000 to \$63,000. Videoconferencing at the desktop level costs substantially less, averaging from \$1,000 to \$5,000 per desktop.

I tested the three popular low-end systems: Intel Corp.'s ProShare Video Conferencing, which is priced at \$1,499; PictureTel Corp.'s Live200, which costs \$1,495; and PictureTel's Live50, which costs \$2,495.

Each vendor packages a fixed camera, electronic whiteboards and document-sharing software and uses the desktop computer's

video monitor for the "talking head" pictures of the participants. The differences show up in their connections to other systems.

The Intel system works with a basic-rate Integrated Services Digital Network (ISDN) line or a LAN. PictureTel's Live200 works over ISDN only. But its Live50 has a better camera and uses six ISDN B channels, rather than the two B — or data — channels used by Intel and the Live200 to reach 128K bit/sec. throughput.

## Picture quality

Given the lower price, you would expect some compromises in desktop video. Because the desktop camera costs a fraction



of the room system's camera, there is less clarity and a smaller field of vision, which allows only one or two people in the picture.

But the biggest factor in getting great images is

bandwidth. When I connected desktop systems at 384K bit/sec. or faster (such as through a 10M bit/sec. Ethernet network), the audio and video quality was surprisingly good. When I connected a desktop to a room system, the desktop's video was on par with a room system's video.

Problems arise when a slower connection is used.

Backpedaling to 128K bit/sec. ISDN service — as you do with the Intel system and the PictureTel Live200 — reduces the pictures from the television-quality 30 frame/sec. rate to about 12 to 15 frame/sec.

Gestures such as waving your arms or moving in your chair create jerky video. A significant distraction occurs when the video of the speaker's mouth and the audio of the spoken words are out of sync, which is common at the slower rate.

On the flip side, documents and whiteboards can be shared at any connection speed. Each system can simultaneously display computer-based documents and use a markable whiteboards for collaborating on projects or giving presentations.

And each side can see the document without having the application (such as Microsoft Corp.'s Excel when collaborating on a spreadsheet) on each computer.

DeVoney is a technology writer in Seattle.

## Intel delays MMX

CONTINUED FROM PAGE 37

said Clyde Eaton, manager of data systems planning at Delta Air Lines in Atlanta.

Delta used 166-MHz Pentium-powered OptiPlex GX systems from Dell Computer Corp. in Austin, Texas. OptiPlex GX systems include sound and full-motion video as standard features.

According to sources briefed by Intel, the delay was caused by a marketing problem, not a technical one.

## Performance over speed

The P55C Pentium processor will deliver improved performance over current Pentium processors, but the clock speed of the chips will remain the same.

"Intel will have to communicate the message to users that the MMX is worth the extra money," said Dean McCarron, an analyst at Mercury Research in Scottsdale, Ariz.

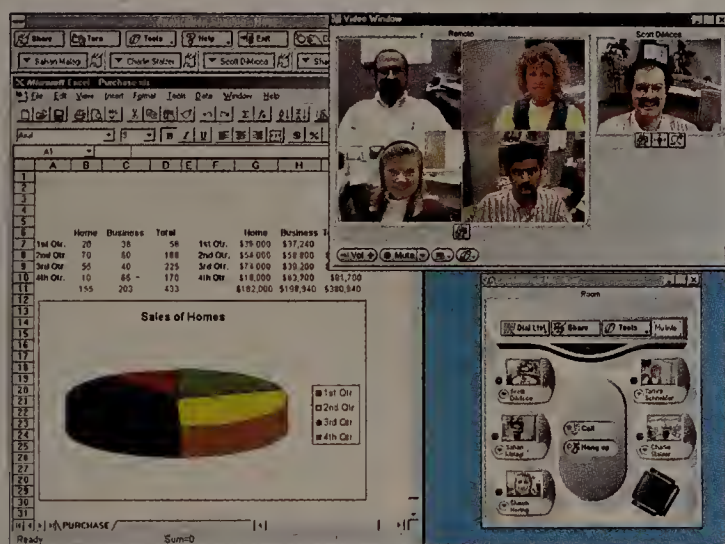
Previously, Intel priced its chips according to clock speed, not based on features such as multimedia.

Pushing back the release date will give software vendors more time to write multimedia titles that take advantage of MMX technology and demonstrate the chip's performance features, McCarron said.

Few software programs have been written to take advantage of the MMX technology, he said.

Intel isn't the only major PC supplier that is trying to speed up multimedia applications.

Microsoft Corp. in Redmond, Wash., last week unveiled the details of its Talisman program, which displays three-dimensional images at high speed.



PC-based videoconferencing systems such as Intel's ProShare let users see meeting participants and share applications with them

## NCR servers

CONTINUED FROM PAGE 37

Improved scalability — with technologies such as Octascale and the SMP Utilization Manager — will give a substantial boost to users who are deploying resource-intensive applications on Windows NT servers, analysts said.

"One thing we have been hearing consistently from our market research is managers and [chief information officers] telling us they could use the additional throughput of an eight-way or a 12-way server," said Jim Hurley, an analyst at Aberdeen Group, Inc., a market research firm in Boston.

## Upgrade potential

Currently, most SMP PC servers top out at four processors.

Some vendors, such as IBM and Hewlett-Packard Co., have announced servers that can support up to eight processors.

With Octascale, users can upgrade a four-processor system to an eight-processor system by simply swapping a processor card in the box.

Unlike standard performance-clustering methods, NCR's Octascale upgrades performance but doesn't feature any interconnect technologies.

That makes it cheaper to implement than performance clustering.

The SMP Utilization Manager extends the scalability of NT so it can take advantage of NCR's eight- and 16-processor WorldMark servers, according to Martin Sinnot, director of Windows NT marketing at NCR.

## Scaling into the enterprise

The following NCR WorldMark servers support the 200-MHz Pentium Pro:

### Low end:

#### WorldMark 4100:

Support for up to eight processors, each with a 512K-byte cache and an 8M-byte static RAM cache. Available in SMP, cluster-ready and high-availability configurations.

### Midrange:

#### WorldMark 5100S:

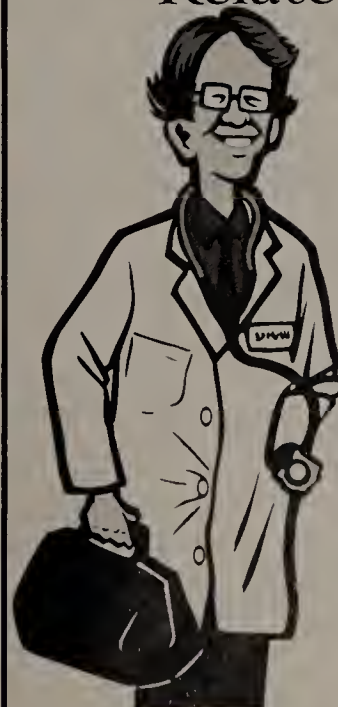
SMP-based with support for up to 32 processors with a 512K-byte cache and 16M-byte static RAM

### High end:

#### WorldMark 5100M:

Massively parallel system with support for up to 4,096 processors using NCR interconnect technology. Supports 100T bytes of data.

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# Software

43

Software

## Object databases lag

Users find best fit in niche applications; relational still rules

By Craig Stedman

Continued user devotion to relational technology is pigeonholing object databases into specialized applications — unless the Internet can come to the rescue.

Even ardent supporters of the technology concede that object databases have little chance of ousting their more entrenched relational counterparts from most mainstream information systems applications. Mission-critical transaction processing, in particular, is likely to stay relational for the foreseeable future, users, analysts and object database vendors said.

"We have too much of an investment in relational technology" to make a wholesale change to object databases feasible, said Peter Belina, vice president of application technology at Lehman Brothers, Inc. in New York. "Our whole support structure is organized around that."

Wanting to off-load queries on stock trades from its main database servers, Lehman Brothers is deploying small object databases on individual PCs as local caches for trading records. But the database servers will remain in the grip of Sybase, Inc.'s relational software, Belina said.

Some vendors hope the 'net will stop relational technology's dominance and offer a vehicle for the widespread acceptance that has eluded object databases.

Object Design, Inc. and Versant Object Technology Corp. this year added products that link their databases to the World Wide Web. And several users said the two technologies appear to make a good match.

"When you're talking about Internet applications where high-speed delivery of information is critical, object databases do a much better job" than relational ones, said Dan Woods, applications editor at Time, Inc.'s New Media unit in New York.



**Closer Look**

### Object databases

Time uses Object Design's ObjectStore database in a personalized news service that will debut this fall on its Pathfinder Web site. The company initially did a prototype on Sybase, but the relational database "provided a lot of overhead" that slowed performance,

Woods said. ObjectStore is much zippier for what Time has in mind, he added.

### Object upperhand

Relational databases store data in tables that have to be joined together to answer complex queries — a programming feat that can eat into throughput. Object databases will let users link complicated data structures as more easily accessible objects. Object-based software also can handle multimedia data such as video and audio. Relational databases typically reduce everything to records based on numbers and characters.

But not everyone is convinced the Internet is the panacea that object data-

bases have been looking for.

Most Web-based corporate IS applications won't go beyond text and forms any time soon because of bandwidth limitations on the Internet, said Richard Finkelstein, president of Performance Computing, Inc., a consultancy in Chicago. Relational databases can easily handle that type of work, he said.

Users said they are still inclined to stick with what they know best and trust unless object databases present a compelling reason to switch.

Sprint Corp. is testing the object waters by off-loading a small piece of its commercial long-distance customer service application from a mainframe database to Versant's software. That follows a sales force automation project for mobile users based on Versant technology.

"But in an [online transaction processing] environment, I'd be the first to tell you that I would not depend on an object database for an application where you're pumping a lot of transactions through it," said Michael Rapken, manager of customer acquisition and management systems at Sprint's IS unit in Dallas. "The products haven't matured to the point where we'd be willing to take that risk."

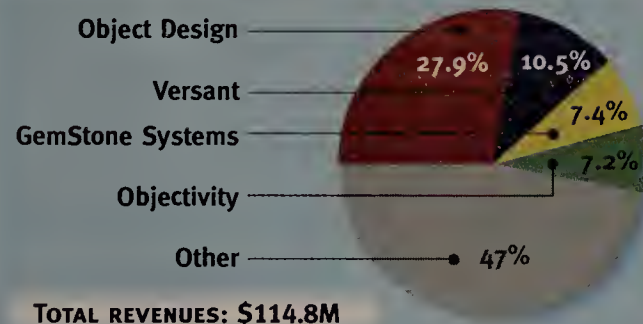
### Not as stable

Object databases aren't as stable and don't scale in size as well as their longer-in-the-tooth relational cousins, Rapken and other users said. Other deficiencies include a lack of third-party graphical development tools and an overreliance on C++, although the latter is being remedied as vendors rush to add support for Sun Microsystems, Inc.'s Java programming language.

Object converts also face a steep learning curve, said Tim Schlagheck, a senior technical staff member at AT&T Corp.'s IS unit in Maitland, Fla. And with graphical tools in short supply, users have to "sort of struggle with what you've got," said Schlagheck, who led AT&T's development of a Versant-based application that collects internal phone usage data for chargeback purposes.

### The numbers, please

1995 worldwide market share for object databases



## Vendors fill mixed bag

Looking to guard their flanks, relational database vendors are incorporating pieces of object technology into their own engines.

**Informix Software, Inc.** bought Illustra Information Technologies last year and plans to combine relational and object features in its Universal Server, due in the fourth quarter.

**Computer Associates International, Inc.** plans to blend its Ingres database with object technology from Fujitsu America, Inc., and Oracle Corp. has promised to include object features in the Oracle8 database it expects to ship next year. **IBM** this month announced multimedia extenders that enable its DB2 software to handle text, image, video and audio data.

The hybrid approach could give users the best of both worlds, said Michael Rapken, director of customer acquisition and management systems at Sprint's IS division in Dallas.

"But I'm a little suspicious about how it's going to work," Rapken said. "I see the two [technologies] as pretty different and distinct." Vendors will have to make sure that performance doesn't suffer from having to map object data into relational tables, he said.

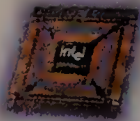
— Craig Stedman

### What's out there

A rundown of object database vendors

| VENDOR                          | PRODUCTS          | TARGETED MARKETS   |
|---------------------------------|-------------------|--|
| Object Design, Inc.             | ObjectStore       | Internet, computer-aided design, telecom, financial services |
| Versant Object Technology Corp. | Versant ODBMS     | Telecom, health care, Internet, financial services           |
| GemStone Systems, Inc.          | GemStone          | Financial services, utilities, insurance, manufacturing      |
| Objectivity, Inc.               | Objectivity/DB    | Software developers, telecom, process control                |
| Poet Software Corp.             | Poet              | Software developers, Internet                                |
| Ontos, Inc.                     | Ontos DB/Explorer | Low-end uses in manufacturing, aerospace, financial services |





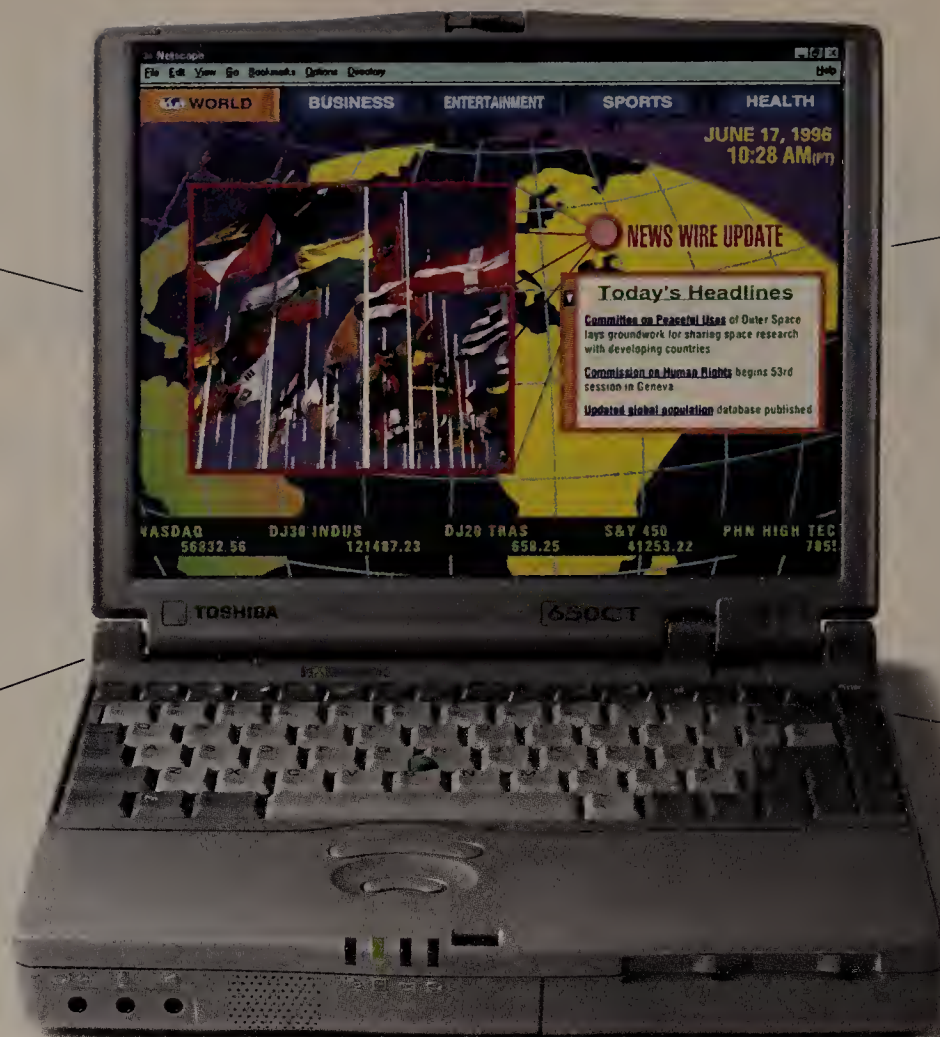
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# Viral threats as dangerous as ever

## Lethal strain could wipe out disks this Thursday

By Gary H. Anthes

The long-running battle between writers of computer viruses and writers of antivirus software ebbs and flows. Lately it has been mostly flowing, with two major new viruses appearing on the scene, joined by several product updates to combat them.

A new and deadly virus is scheduled to strike this Thursday (Aug. 22) and again on Sept. 22, virus watchers say. The Hare (as in Hare Krishna) virus will display the message "HDEuthanasia" on those dates and then attempt to write over all files on the computer's hard disk.

According to Ian Whalley, editor of the "Virus Bulletin" in Abingdon, England, Hare is extremely complex and difficult to detect. It has apparently spread via the Internet, and unactivated versions have been seen in a number of countries, including the U.S., he noted.

### Laroux for Excel, too

Another new virus is of the family of infectors called macro viruses, which first appeared a year ago. Called ExcelMacro.Laroux, it is the first virus to infect Microsoft Corp. Excel spreadsheets.

Laroux behaves much like the now-common Word.concept virus, which is transmitted in documents created with Microsoft Word. Laroux can travel as spreadsheet attachments to electronic mail or any other way that spreadsheets are transmitted. It is relatively harmless but may cause "application anomalies" in a few systems, according to the National Computer Security Association (NCSA) in Carlisle, Pa.

The NCSA said Laroux is likely to spread more slowly than Word.concept because Excel isn't as widely used as Word and

### Virus encounters per 1,000 PCs each month

|               |      |
|---------------|------|
| July 1994     | 0.2  |
| October 1995  | 3.0  |
| February 1996 | 14.4 |

Source: National Computer Security Association

most users share spreadsheets less often than word processor documents.

Antivirus product vendors have introduced products to deal with the new viruses (see chart below).

According to IBM, viruses are being written at the rate of six per day on average — the highest rate ever.

"But that doesn't mean very much" because many viruses are written but never released, said Peter Tippet, president of the NCSA. He said viruses are introduced "in the wild" — on users' PCs — at the rate of two per month.

Tippet said the NCSA this week will introduce a virus cost-analysis model that will enable users to evaluate the benefits of alternate virus protection strategies. In the NCSA's own use of the model, the following results were obtained:

- A company that takes no preventive steps at all will spend \$1.8 million per 1,000 PCs per year recovering from virus attacks.
- Rudimentary steps, such as employee awareness programs, will lower that cost to about \$800,000.
- Running virus scanners once a day on half of the company's PCs will reduce the cost to \$400,000.
- Running background scanners full-time on half of the PCs will result in an annual cost of virus cleanup of just \$30,000.

A description of the ExcelMacro.Laroux virus can be found on the Internet at [www.commandcom.com](http://www.commandcom.com).

### Recent antivirus product announcements

#### Cheyenne Software, Inc., Roslyn Heights, N.Y.

Posted free updates to its products to cure the Hare virus, at [www.cheyenne.com/security](http://www.cheyenne.com/security). Also announced AntiVirus Agents that remove viruses from the major messaging and groupware applications.

#### Command Software Systems, Inc., Jupiter, Fla.

Named and described the ExcelMacro.Laroux virus and announced that its products will detect it. Updates are available at [www.commandcom.com](http://www.commandcom.com).

#### IBM, Sterling Forest, N.Y.

Announced AntiVirus 2.5, with the ability to scan Internet documents for macro viruses and other enhancements. Also announced a product update to detect the Laroux virus at [www.brs.ibm.com/ibmav.html](http://www.brs.ibm.com/ibmav.html).

#### McAfee Associates, Inc., Santa Clara, Calif.

Announced VirusScan 2.0 for the Macintosh, a \$65 product with 30 enhancements for security and ease of use. Also announced a detector for the Laroux virus, available at [www.mcafee.com](http://www.mcafee.com).

#### Symantec Corp., Cupertino, Calif.

Announced product update for detection and repair of the Laroux virus, available at [www.symantec.com/avcenter](http://www.symantec.com/avcenter)

## Word users cautious as macro viruses multiply

By Lisa Picarille

Users of Microsoft Corp.'s best-selling word processor are taking more precautions against the strains of Word macro viruses that are becoming more prevalent.

Word macro viruses are running rampant because they can execute when documents or spreadsheet files are opened, making it easier to infect a larger number of files and systems. Previous binary types of viruses attacked systems via executable (.exe) files.

Not all the Word macro viruses — there are at least a dozen mutations — corrupt or destroy data. Some simply lock up systems or display a harmless message, said Alex Haddox, product manager at Symantec Corp.'s AntiVirus Research Center. Nevertheless, Word macro viruses have been cited by the National Computer Security Association as the fastest-spreading type of computer virus.

The most obvious method users are employing to combat the Word macro virus is to install antivirus software that detects and, in some cases, repairs data.

"We are constantly exchanging files over the Internet, and that poses a big risk for infection. But we can't monitor every single file on our system. So we just have to make sure that we are diligently running the anti-virus software," said Ed Krzanowski, a systems manager at International Paper, Inc. in Woronoco, Mass.

Some found out how valuable prevention can be, but only after the fact.

Two months ago, the *San Francisco Bay Guardian*, a weekly newspaper, was infected by the Wazzu Word macro virus, and its publishing schedule was halted for nearly two days, according to Bayo Omololu, systems manager at the *Guardian*.

"At first we thought it was just a joke because the word Wazzu came up on the screen. But then we realized that people couldn't send files because the macros were infected," Omololu said. "It didn't destroy data, but it really wreaked havoc on our schedule."

Now the *Guardian* is diligent about making sure that everything is scanned by anti-virus software.

### Macro viruses

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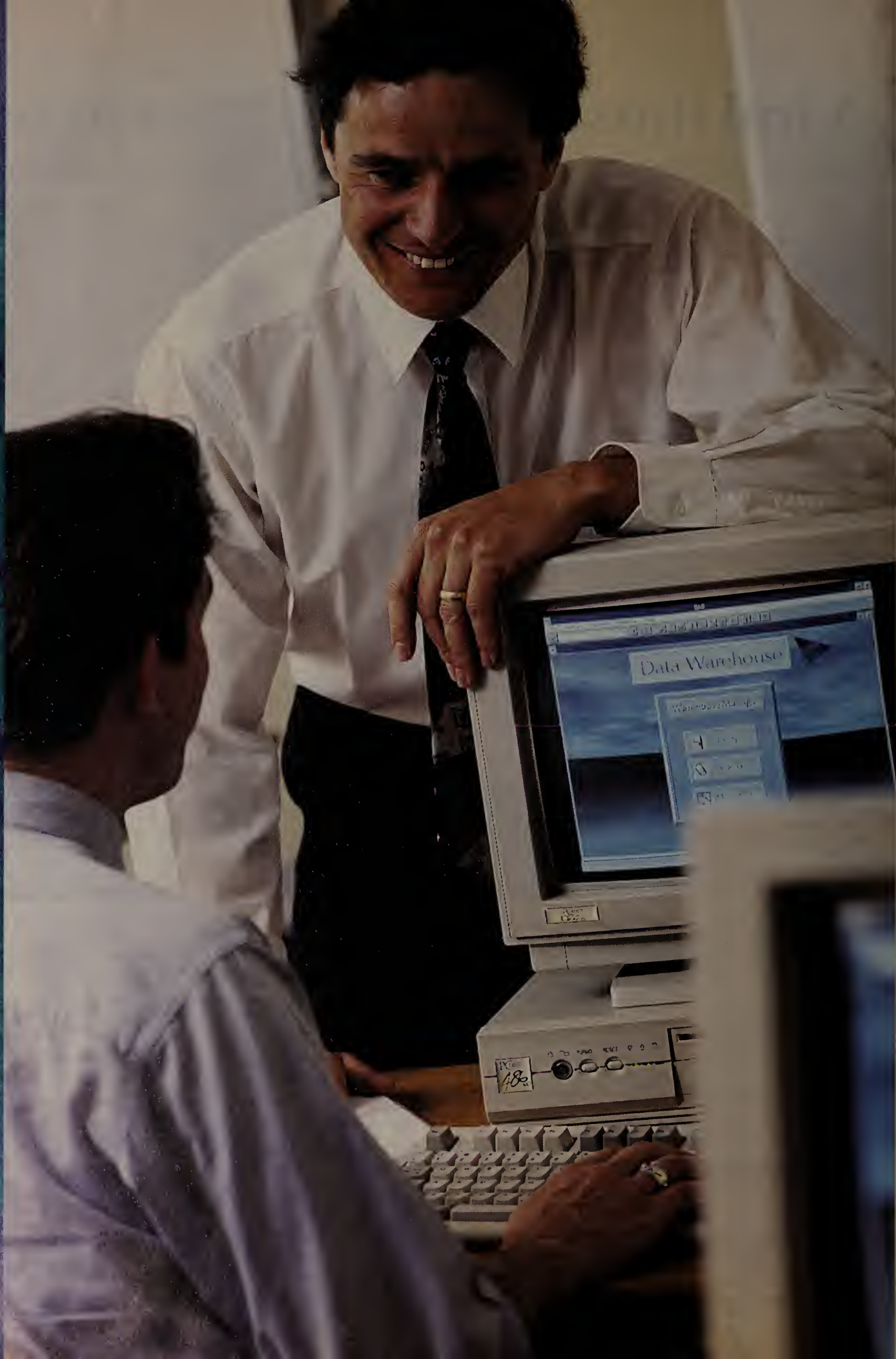
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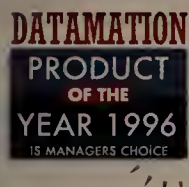




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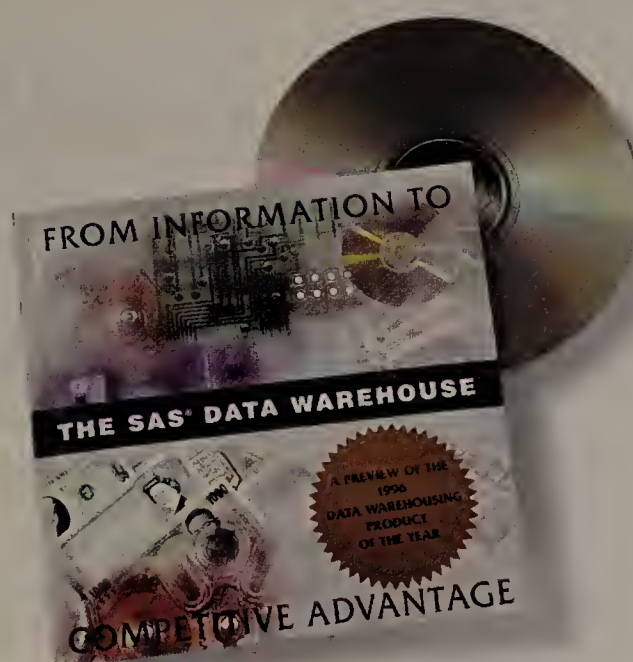


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  - (d) Unix
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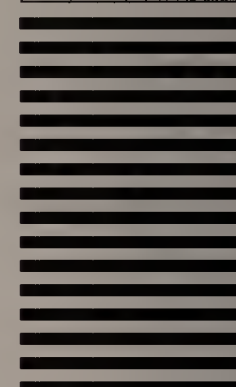
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# IS managers drive search for Internet management tools

By Bob Francis

Information systems managers searching for that perfect wave of Internet management tools may not be able to hang ten yet, but the swells are starting to look rad.

That's because several systems management vendors recently added new World Wide Web management tools to their product lineups. And for IS managers deploying intranets and Internet, management tools are a requirement.

"We're going to be deploying intranets in the next three to six months, so we're looking at what tools are out there," said Paul Schwartz, manager of technical services at Alliant Food Service, Inc. in Phoenix.

with PatrolWatch for Web Browsers and Knowledge Module for Internet Servers. Compuware has brought Internet and intranet server management technologies into its EcoTools line of network applications management tools.

## Shipments go up

Internet server shipments will increase to 32,000 this year, up from 14,000 last year, according to International Data Corp.

According to Paul Mason, an analyst at International Data Corp. in Framingham, Mass., these systems management tools are just the beginning of a wave. "Many of the tools we'll start to see, particularly application management tools, will have to take the Web into account," he said.

Continued development of Web-based management tools seems assured, Mason said, following the proposed Web-based

# Delta takes wing with NT

By Bob Francis

Delta Air Lines wants its reservations agents to be ready when you are.

Viewing its reservation system as the front line in an aggressive battle for market share, the Atlanta-based airline is changing the way its agents receive and process information by deploying a new system called Magellan.

In use at several of Delta's 12 reservation centers, Magellan comprises 3,700 new PCs running the proprietary Magellan software under Windows 3.1, replacing a text-based DOS system. Delta plans to upgrade soon to Windows NT to take advantage of NT's larger memory address space.

The previous system depended on agents learning sets of keystrokes that often changed as new features were added to the system.

Airline reservation systems were among the first operations to be computerized, and many remain tied to legacy systems. Delta claims that its new system is the

first graphically based reservation system in the airline industry.

The graphical interface can show multiple pieces of information at a time, said Clyde Eaton, Delta's manager of data systems planning. "You can see the flight times and the prices at the same time, so we can cut the amount of time we [need] to complete a [reservation] call," he said.

The system also solves a costly training problem for Delta, which is faced with high turnover among reservation agents. The system is easier to use, so new agents won't spend as much time learning the ropes, officials said.

With the graphical interface also comes a new keyboard, complete with a large trackball, for sales agents to use to navigate Magellan's graphical seas.

Delta didn't reveal the cost of the whole system, but the \$10 million PC contract was won by Austin, Texas-based Dell Computer Corp., which beat out Hewlett-Packard Co. Dell provided 3,700 OptiPlex GX systems with 166-MHz Pentium processors.

Jimmy McCullough, director of information technology at Delta, said the PC contract had one catch: The money had to be spent and the systems installed by June 30, the end of Delta's fiscal year.

Dell took delivery of Delta's system components — including hardware, Windows 3.1, applications software and the Magellan software — on May 17.

The software was loaded on to the PCs at Dell's manufacturing plant. "We were making changes to Magellan until the last three seconds before Dell began loading the software," Eaton said.

## All systems go

By May 28, all 3,700 systems had been shipped to Delta's information subsidiary, TransQuest, which installed them at reservations centers in time for Magellan's scheduled takeoff.

Next up for Magellan is adding computer telephony integration so reservation agents can get customer information as they answer a call. That is a common technology at many call centers but a rarity in the airline industry, Delta officials said.

## New Products

Visio Corp. has announced Blackcomb, diagramming software.

According to the Seattle company, Blackcomb is network diagramming software with database development and business process management features. It was designed to offer diagramming capabilities for the management of information systems and business processes.

Blackcomb will include automatic line routing technology and Microsoft Corp.'s Visual Basic for Applications. This will give users a common set of tools for customizing Visio and other programs that support the Microsoft ActiveX Automation interapplication programming interface.

Pricing will be available later this year.

► **Visio**  
(206) 521-4500  
[www.visio.com](http://www.visio.com)

**EveryWare Development Corp.** has announced Tango Enterprise for Windows, an intranet rapid application development tool for building commercial World Wide Web applications that link Web servers to a variety of databases.

According to the Mississauga,

Ontario, firm, Tango Enterprise lets users quickly create Web-based applications with database connectivity. It has a drag-and-drop Editor component that doesn't require expertise in C, Java, SQL or Hypertext Markup Language (HTML). It has a visual programming environment that generates HTML and SQL code while letting developers customize and control their applications.

Tango Enterprise allows for the specification of if-then logic and the tracking of users throughout sessions. It includes a Sun Microsystems, Inc. JavaScript library that can be used to perform online data validation functions.

It supports direct access to Oracle Corp. databases as well as all Open Database Connectivity-compliant databases. Pricing starts at \$995 for a five-user license.

► **EveryWare Development**  
(905) 819-1173  
[www.everyware.com](http://www.everyware.com)

**Avid Technology, Inc.** has introduced Elastic Reality 3.0, a morphing and compositing special effects package for Microsoft Corp.'s Windows NT platform.

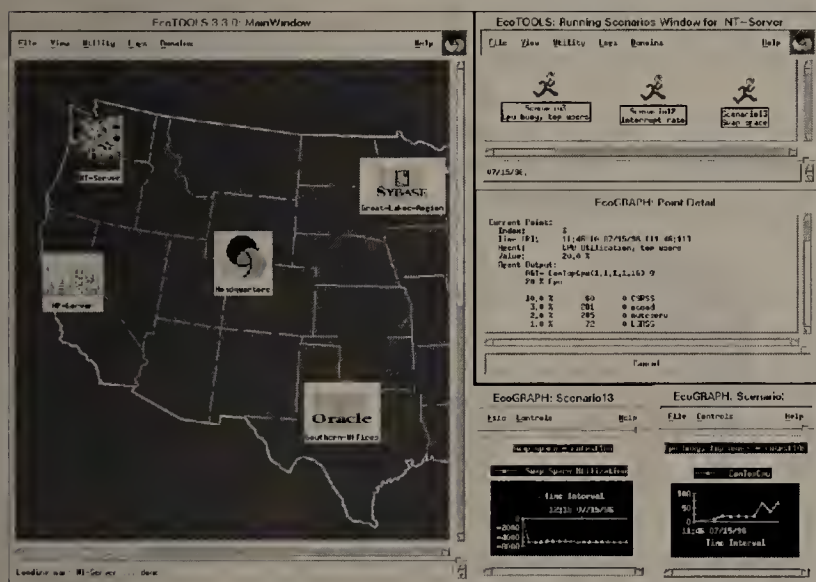
According to the Tewksbury, Mass., company, Elastic Reality 3.0 has compositing features for jigsaw rendering, multiple-layer rotoscoping and independent control over hue, saturation contrast,

color correction and tracking shape. It also has Bezier curve technology and image manipulation features for mathematically oriented warping. It was designed for television postproduction, feature film effects, corporate video and multimedia production.

Pricing starts at \$6,000.  
► **Avid Technology**  
(508) 640-6789  
[www.avid.com](http://www.avid.com)

## Product shorts

**Traveling Software, Inc.** has introduced LapLink 7.5 for Windows 95, remote access software. The latest version lets users synchronize one or many folders automatically and schedule unattended file synchronizations. It also includes file-transfer recovery features with remote-control performance and bit-map filtering features. Cost: \$149. Traveling Software, Bothell, Wash. (206) 483-8088, [www.travsoft.com](http://www.travsoft.com). ... **Henning Associates** has introduced Rolodeck, a business card management system. Rolodeck let users freely format business card information into a database format. It also lets users print labels and envelopes from stored information. Cost: \$15. Henning Associates, Charlottesville, Va., (804) 295-0554, [users.aol.com/mikerh1053/](mailto:users.aol.com/mikerh1053/).



Compuware has brought Internet and intranet server management technologies into its EcoTools line of network applications management tools

Schwartz is evaluating Platinum Technology, Inc.'s TransTracker and WireTap database and performance management tools.

WireTap, which will be available in the fourth quarter, can also be used to monitor traffic to and from corporate intranets and Internet and Web servers, according to officials at Platinum, which is based in Oakbrook Terrace, Ill.

BMC Software, Inc. in Houston and Compuware Corp. in Farmington Hills, Minn., have also added Internet management features to their tools.

BMC added Internet and intranet monitoring to its Patrol suite

enterprise management standards effort announced in July.

That still-nascent effort is being pushed by BMC, Cisco Systems, Inc., Compaq Computer Corp., Microsoft Corp. and Intel Corp. The idea is to integrate Web management into existing standards such as the Desktop Management Interface, Simple Network Management Protocol and the Hypertext Transport Protocol.

For users, those standards may be important in the future, but for now, the tools themselves are more important. "We'll need to use these tools before the standard is approved," Schwartz said.





# Java tools still in short supply

By Frank Hayes

When Sun Microsystems, Inc. officially launched its Java Internet development language early this year, vendors promised a flood of Java development tools.

But so far, the tools have arrived in a slow trickle — and that is making life tough for corporate developers trying to create applications that use the language.

"We need tools like [Microsoft Corp.'s] Visual Basic that let you draw out forms and drop them on a page," said Eric Wolf, a systems analyst at Eli Lilly & Co. in Indianapolis. The lack of that ability "is a shortcoming of the current crop of Java tools," he said.

To help fill that gap, Sun's SunSoft, Inc. subsidiary this month

will ship Java WorkShop, a drag-and-drop Java development environment that SunSoft hopes will make Java easier to use.

The \$295 tool set, which runs on Windows 95, Windows NT and Sun's Solaris, can be used by Java programmers to create applets and applications and by non-programmers to arrange Java components on World Wide Web pages.

Java WorkShop joins a small group of other Java visual development environments, including JFactory from Rogue Wave Software, Inc.

in Corvallis, Ore., and JDesigner-Pro from Bulletproof Corp. in Los Gatos, Calif.

The heavy hitters of visual development, including Microsoft, Powersoft Corp. and Borland International, Inc., have yet to ship Java visual tool sets.

But those vendors "are going to be difficult to beat" when they finally ship Java tools late this year, said Evan Quinn, an analyst at International Data Corp. in Framingham, Mass.

The dearth of visual tools isn't the only problem devel-

opers face. Another is the current lack of standards. Some tools limit the ability to use third-party Java libraries, and most were designed for creating only Java front-end software.

"We use Java on our Web servers, and we're missing a way to use it with [Common Gateway Interface] scripts and other Web tools," said Rob Reesor, a senior software engineer at the Virtual Vineyards division of Net Contents, Inc., an online wine retailer in Palo Alto, Calif.

Also missing are project management tools that are widely available for other languages. "To make Java an enterprise tool, we need source code control and the ability to handle multiple projects at once," Wolf said.

## No Java for Win 3.1 yet

Netscape Navigator 3.0, which is set to ship this week, still won't include the long-promised Java support for Windows 3.1. But Netscape is still working on adding it to a future version, company officials said.

## Java tools get RAD

The number of Java developers who use rapid application development (RAD) tools will jump next year, according to IDC estimates



Source: International Data Corp., Framingham, Mass.

## IS managers look for components at Object Expo

By Sharon Gaudin

With object-oriented programming rapidly gaining momentum, this year's Object Expo in New York drew IS people who hope to boost their businesses and cut costs with components.

"I'm reading everywhere that objects are coming to fruition and will help us solve business problems quicker," said Bob King, technical manager at Lucent Technologies, Inc. in Murray Hill, N.J. "If there are objects out there that would help me, I haven't found them. I've been hoping to find them at the expo."

A handful of vendors, trying to catch the eye of King and other corporate information systems attendees, made announcements at the recent trade show. They included the following:

- **ObjectSpace, Inc.** announced the latest versions of its Systems ToolKit, a C++ library, and STL ToolKit, a portable version of the library. The two libraries are being added to the company's ObjectSpace C++ Component Series, which now holds 10 C++ class libraries.

- **Geodesic Systems, Inc.** is releasing Version 2.0 of Great Circle, a product designed to eliminate memory bugs in 16- and 32-bit C and C++ programs. Geodesic Systems President Michael Spertus said the company is working on a Java version.

- **Thought, Inc.** announced a client/server database access system. CocoBase is a family of database access modules designed to create and maintain maps among Internet-based Java applications and relational databases within corporate networks. CocoBase was designed to work with a range of databases, including those from Oracle Corp., Informix Software, Inc. and Sybase, Inc.

## IS bites the warehousing bullet

By Sharon Gaudin

Information systems managers who attended a data warehousing trade show in New York this week know what they want: a store for their business information.

They are looking for the tools to build it without breaking the bank or driving themselves crazy in the process.

"I'm looking at the different ways to build a warehouse," said Stephanie Thomas, a computer specialist at the New York City Fire Department. "We need to have a warehouse for all the designs and layouts of the buildings in New York in case of fire or even a bombing. ... I'm hoping I can get the information here on the best way to build it."

Many IS shops are biting the data warehouse bullet. In 1995, some \$2 billion was spent on data warehousing hardware, software and services, according to consultancy Meta Group, Inc. And the market is still growing at an annually compounded 40% rate, said Meta Group analyst Aaron Zornes, in a keynote address at the DCI Data Warehouse World show.

Zornes also said the key to successful warehousing may not lie in data warehousing at all, but in data marts. Those are typically smaller than full-fledged warehouses, targeted at a specific kind of information and a lot less expensive to build. "Half the information out there is in data marts. The data marts are where the action is," he said. "You have to think globally and act locally. Think architecture and long haul but build data marts."

In a second keynote address, Richard Finkel-

stein, president of Performance Computing, Inc., sounded more like an inspirational speaker at a stress management course than a technology guru. He said IS people need to focus on using data warehousing to make their lives easier.

"My life was a lot better before PCs than after because I would eat dinner without computing or go to a bookstore without buying a book on ways to make Windows work," Finkelstein said.

"Technology has not become a means for a better life, but it has become a lifestyle in itself."

One way to simplify, Finkelstein said, is to move away from PCs. He predicted that in the next three years, companies will turn to network computers, which use information and applications stored on the network instead of on individual desktop computers. That will require less intervention by regular employees to make computers work, he said.

Among the announcements at the show, **Sybase, Inc.** unveiled QuickStart Data Mart, software for rapid development of data marts. QuickStart integrates Sybase IQ with **Carleton Corp.**'s Passport data access and transformation tools, along with query and reporting tools from **Cognos, Inc.**, **Brio Technology** and **Business Objects**.

QuickStart Data Mart costs \$125,000.

**PostalSoft, Inc.** announced DataRight, a package that helps prepare data for warehousing by making sure items such as names are standardized throughout. DataRight is available on Unix, Windows, Windows NT and **Digital Equipment Corp.**'s VMS. Pricing information wasn't available.



## Trade shows



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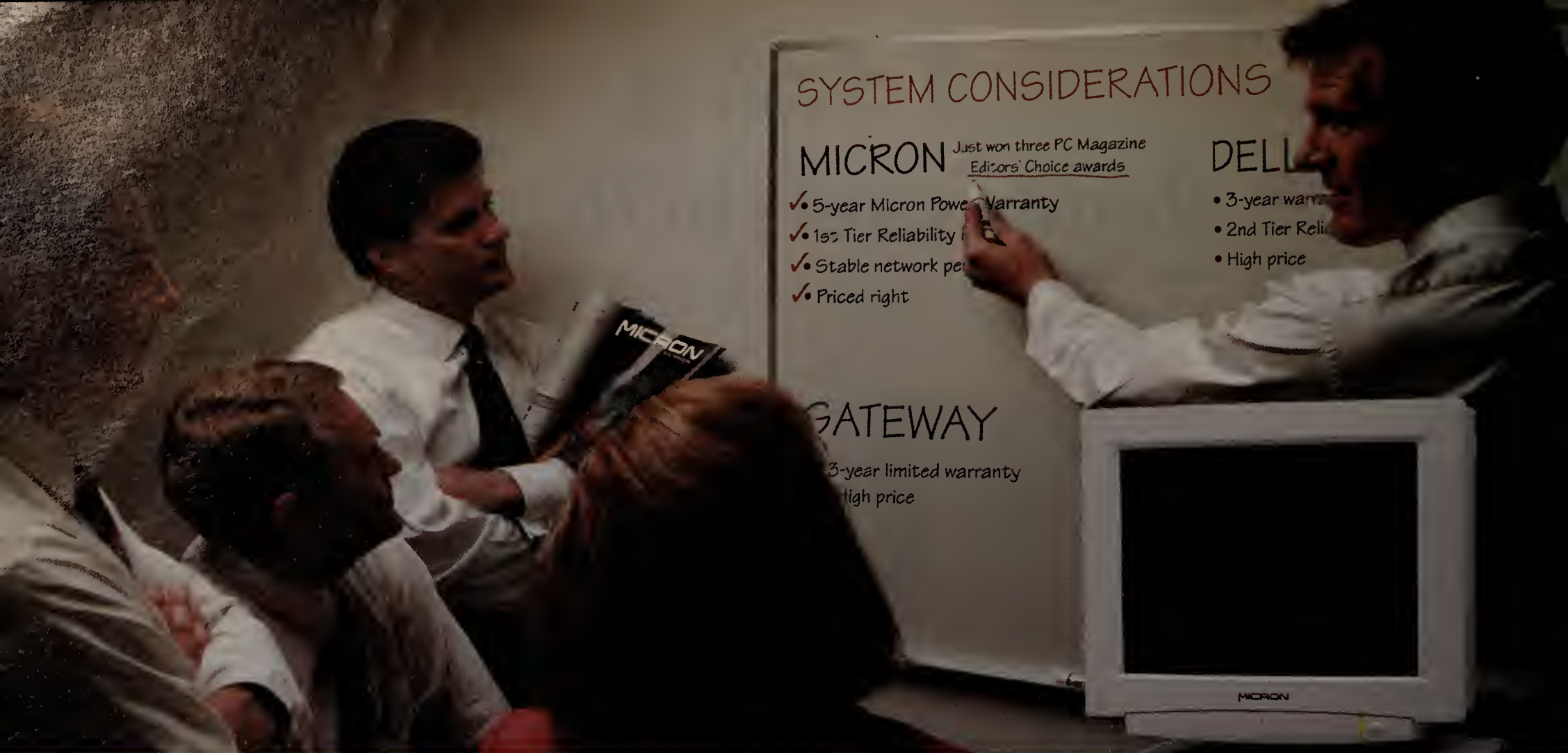
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Banyan unveils  
software components  
for StreetTalk, 56

# The Enterprise Network

## Cisco's 7500 picks up speed

By Bob Wallace

After ignoring Cisco Systems, Inc.'s high-end 7500 router for the first few months of its life, hordes of users are being drawn to the year-old product by its power, raft of features and pricing that gets them right where they live.

The router market leader turned the 7500's fortunes

around by shipping the improved products on time and following up with an attractive upgrade plan.

"Most 'year-after' stories expose late and faulty products and broken promises to users," said Daniel Briere, president of TeleChoice, Inc., a consulting and research firm in Verona, N.J. "But Cisco made Year 1 a banner year for the 7500."

High-end routers such as the original 7000 and the 7500 typically anchor large

corporate networks and perform high-speed switching, much like large data center switching systems.

The 7500s, with four times the capacity and four times the switching power of the 7000, are a huge improvement. And the base price of the 7500 is only \$4,000 more than the 7000.

But users are typically slow to move from one high-end router to another because they fear network disruptions and want to maximize their investments in existing systems.

So although the 7500s began shipping last summer, sales of the 7000s still accounted for almost 100% of Cisco's high-end router sales by the end of last year, said Richard Palmer, director of marketing for high-end routers at Cisco.

Cisco's 7500, page 56

### High-end routers

## Keeping networks picture-perfect

By Patrick Dryden

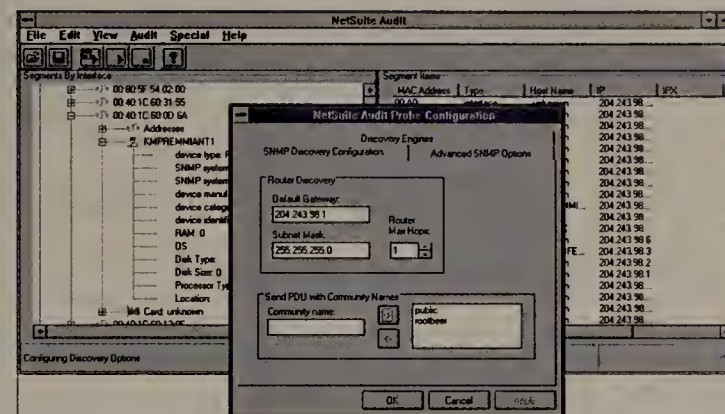
Up-to-date network diagrams may not be rare for long.

Nearly every server room and network operations center sports a map that purportedly shows where everything is located and how it all connects. But those diagrams, backed by outdated databases and binders bursting with inventory lists, can't keep up with the moves, upgrades and changes in dynamic enterprise networks.

To help that situation, NetSuite Development in Wayland, Mass., next month will preview auditing software for its network documentation package, which combines a search engine with drawing tools backed by a database of user and vendor configuration data.

Administrators will then be able to search segments and import current data from network management platforms. That saves them a trip to every cramped wire closet or remote office to check the configuration of devices when troubleshooting problems or planning upgrades.

NetSuite has an edge on solving this problem now, but competitors are developing similar capabilities,



NetSuite's auditing software for its network documentation package combines a search engine with drawing tools backed by a database of user and vendor configuration data

according to Jennifer Pigg, vice president of data communications at The Yankee Group in Boston.

Information systems groups lack accurate network diagrams but "don't want to reinvent the wheel" by repeating site surveys each time they need to catch up, Pigg said.

Other network design and documentation vendors seeking to fill this need include Cambio Networks, Inc. (formerly Isicad, Inc.) in Santa Clara, Calif.

Cambio's package can import map information

NetSuite, page 57

# Merlin ready for fall flight into Web territory

## OS/2 Warp to include internal browser

By Laura DiDio

Fall is shaping up to be the season of the Internet — especially for operating systems.

IBM, like rivals Microsoft Corp. and Novell, Inc., is about to ship a new release of its operating system software that will have a heavy emphasis on integrated Internet capabilities. OS/2 Warp Version 2.2, code-named Merlin, recently finished its final beta test among 10,000 users, according to John W. Thompson, general manager of IBM's personal software products division in Somers, N.Y.

IBM announced months ago that Merlin would incorporate an internal World Wide Web browser. This is "an absolute necessity for all new versions of operating

systems and network operating systems and any vendor that hopes to be competitive," said Jon Oltzik, an analyst at Forrester Research, Inc. in Cambridge, Mass.

But IBM plans to go beyond basic Web functionality in Merlin, Thompson said. "Our long-term strategic goal is to completely Java-enable OS/2 Warp, and that includes the ability to run native Java applications."

### Netscape negotiations

Additionally, Thompson said, IBM is discussing with Netscape Communications Corp. plans to build a native version of Netscape Navigator for OS/2 Warp. "We're hoping to ship it with Merlin, although it's not set in stone. How-

ever, if it doesn't ship with Merlin in September, the Netscape Navigator will be available as a free download no later than October," he said.

"That's excellent news," said Jeff Sabin, network specialist at The Principal Financial Group, a financial services firm in Des Moines, Iowa. "We've needed Netscape Navigator functionality for a while now. The current OS/2 Warp Web Explorer isn't Java-enabled, and it lacks many inherent features like SSL, the security layer that ensures safe connections to various Web sites. So this is just what we've been waiting for."

Beta users such as Bill Howey, project manager at Mazda Motor Corp. in Irvine, Calif., said they liked the fact that the uniform re-

source locators represented by the OS/2 Warp icons can be loaded on and off of disks and grouped into folders "like an on-line file cabinet."

"If you're on the Web and see something you like, you can drag and drop it into a folder. And the next time you access it, you can simply click on it. It's incredibly simple, and that's what our users want," Howey said.

Sabin said a Java-enabled OS/2 Warp platform will let his firm distribute information more easily to its end users and save money in the process. "From an intranet perspective, the Java-enabling will let us cut down on the number of hard-copy employee handbooks, program manuals and memos that we routinely distribute. We'll save ourselves tens of thousands of dollars annually," he said.

### Key features in the upcoming OS/2 Warp

- Voice- and speech-enabled, making mouse and keyboard use optional
- An internal Web browser and object-oriented technology for easy Internet access
- Universal client that will connect to any network operating system, including NetWare and Windows NT Server
- Mobile File Synchronization and remote access capabilities
- Left and right mouse buttons

OS/2 Warp is due in September; pricing isn't set yet



# Computerworld Editorial Calendar

August - November, 1996

| Issue Dates | Ad Closings<br>Color* B&W |             | Editorial Features  | Show Distribution &<br>Ad Readership Study Issues  |                 |
|-------------|---------------------------|-------------|---|--|-----------------|
| Aug.<br>5   | July<br>19                | July<br>26  | <b>Closer Look:</b> E-mail integration<br>Approaches to the thorny problem of making multivendor e-mail environments work together  |  |                 |
| Aug.<br>12  | July<br>26                | Aug.<br>2   | <b>Buyer's Guide to Internet Security:</b> Corporations may be flocking to the Internet, but they are doing it with a wary eye. Fear of hackers and other security concerns have kept the corporate world from taking full advantage of the Internet's capabilities. This Buyer's Guide will look at firewall products and other technologies designed to support robust but secure Internet applications.  |  |                 |
| Aug.<br>19  | Aug.<br>2                 | Aug.<br>9   | <b>Closer Look:</b> Object Databases<br><b>IS Leadership Series Supplement</b>  | <b>Object World</b><br>San Jose<br>8/20 - 8/22   | Starch<br>Study |
| Aug.<br>26  | Aug.<br>9                 | Aug.<br>16  | <b>Buyer's Guide to PC LAN Management Products:</b> How do you keep the departmental systems running without dedicating an IS staff member to tasks such as backup and access management? A variety of products help IS off load those responsibilities, and they work in cooperation with enterprisewide systems management packages. This Buyer's Guide will look at the strengths and weaknesses of some of those LAN-level management products, and explore user needs.<br><b>Monthly Supplement:</b> Intranets<br><b>Special Report:</b> The Future of Computing | <b>CA World</b><br>New Orleans<br>8/25 - 8/30  |                 |
| Sept.<br>2  | Aug.<br>16                | Aug.<br>23  | <b>Special Report:</b> Salary Survey<br>Computerworld's annual salary survey captures salary levels for IS professionals from the CIO to help desk operator. A major undertaking, the survey results are broken down by company size, region and industry.  |  |                 |
| Sept.<br>9  | Aug.<br>23                | Aug.<br>30  | <b>Closer Look:</b> Netware<br><b>Special Supplement:</b> Network 25<br>A joint Computerworld, Network World special 60-page magazine profiling outstanding users of networking technology from around the world. In addition to a listing of 25 outstanding organizations and detailed company profiles, the issue will examine regional differences in networking, trends in technology and useful advice on emerging networking issues.  | <b>Networks Expo</b><br>Dallas, 9/10 - 9/12<br><b>Mobile World</b><br>Boston, 9/10 - 9/12<br><b>Internet Commerce Expo</b><br>Anaheim, 9/10 - 9/12 | Starch<br>Study |
| Sept.<br>16 | Aug.<br>30                | Sept.<br>6  | <b>Buyer's Guide to Internetworking:</b> With demand for bandwidth still on the rise, users are turning to technologies such as fast Ethernet and token ring switches. This Buyer's Guide will look at how users are addressing the bandwidth challenge and which products best meet their needs.<br><b>IS Leadership Series Supplement</b>   | <b>Networld + Interop</b><br>Atlanta<br>9/18 - 9/20  |                 |
| Sept.<br>23 | Sept.<br>6                | Sept.<br>13 | <b>Managing:</b> The best new books for IS managers<br><b>Special Report:</b> Top Web sites for IS managers<br><b>Monthly Supplement:</b> Intranets   |  |                 |
| Sept.<br>30 | Sept.<br>13               | Sept.<br>20 | <b>Buyer's Guide to Groupware:</b> The old groupware model went out the window with the emergence of the World Wide Web. Now, products such as Lotus Notes, Microsoft Exchange and Novell Groupwise XTD are being repositioned to act as gateways to the Internet. This Buyer's Guide will look at how those server-based products are handling the transition, and at some of the Web-based alternatives being offered by startups.  | <b>SIM Fall Conference</b><br>San Francisco<br>9/29 - 10/2   |                 |
| Oct.<br>7   | Sept.<br>20               | Sept.<br>27 | <b>Buyer's Guide to RISC Servers:</b> Enterprisewide applications often are being driven by multiprocessor servers based on Reduced Instruction Set Computer technologies such as PowerPC, Alpha, Sparc, MIPS and PA-RISC. This Buyer's Guide will explore the challenge of running the corporation on these products, and the strengths and weaknesses of some of the key vendors.   | <b>Unix Expo</b><br>New York<br>10/8 - 10/10   |                 |
| Oct.<br>14  | Sept.<br>27               | Oct.<br>4   | <b>Closer Look:</b> Videoconferencing<br>Is it really ready for the desktop? A look at the state of the art in the PC space.  |  |                 |
| Oct.<br>21  | Oct.<br>4                 | Oct.<br>11  | <b>Buyer's Guide to Notebook PCs:</b> They are the core computing platforms for a growing percentage of corporate users. Designed to work in hotel rooms, airports and in the office, notebook PCs pack the punch of desktop systems but carry their own set of technical challenges. This Buyer's Guide will examine the strengths and weaknesses of leading notebook vendors, and explore some of the issues that user organizations face when they roll out notebook-based strategies.<br><b>IS Leadership Series Supplement</b>                                   |  |                 |
| Oct.<br>28  | Oct.<br>11                | Oct.<br>18  | <b>Closer Look:</b> Java Development<br><b>Monthly Supplement:</b> Intranets<br><b>Annual Computerworld Campus Edition</b> (actual mail date October 31)  | <b>Software Developers' Conf.</b><br>Washington, DC<br>10/29 - 10/31   |                 |
| Nov.<br>4   | Oct.<br>18                | Oct.<br>25  | <b>Buyer's Guide to Network Operating Systems:</b> Complex, enterprisewide applications need a robust network operating system to be working in the background. This Buyer's Guide will explore the NOS buying process, and examine how well NOS products such as Windows NT, Netware, Banyan Vines, and OS/2 Warp Server support the corporate user.   |  |                 |

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# Computerworld Editorial Calendar

November - December, 1996

| Issue Dates | Ad Closings<br>Color* B&W |               | Editorial Features  | Show Distribution &<br>Ad Readership Study Issues               |
|-------------|---------------------------|---------------|---|---|
| Nov.<br>11  | Oct.<br>25                | Nov.<br>1     | <b>Annual Computerworld Skills Survey:</b> Where is the talent going? What skills do you need to succeed in an IS career? This expanded feature details which IS skills are most in demand — by region, industry and technology — and which ones are bringing IS professionals the greatest rewards.  |   |
| Nov.<br>18  | Nov.<br>1                 | Nov.<br>8     | <b>Buyer's Guide to Multimedia PCs:</b> The day of the simple DOS-with-floppy-and-hard-drive PC has long passed. Today's applications demand video and sound, not just a blinking cursor. New generations of processor chips pack power, and they are tightly integrated with video and sound technology, high-speed CD-ROMs, speakers and huge-capacity disk drives. This Buyer's Guide will examine the high-end desktop product offerings of key vendors, and explore the technology path being carved out by the industry at large.<br><b>IS Leadership Series Supplement</b> | <b>Comdex Fall</b><br>Las Vegas<br>11/18 - 11/22                |
| Nov.<br>25  | Nov.<br>8                 | Nov.<br>15    | <b>Closer Look:</b> Outsourcing/systems integration<br><b>Monthly Supplement: Intranets</b>   | Starch<br>Study   |
| Dec.<br>2   | Nov.<br>15                | Nov.<br>22    | <b>Buyer's Guide to Decision Support Tools:</b> CEOs and other executives are demanding new levels of dynamic access to corporate data. They need reports that will help them make strategic decisions. That leaves IS managers to implement technologies such as OLAP and ROLAP and links that deliver relational data through new vehicles such as the World Wide Web. This Buyer's Guide will examine some of the key decision support tools, and explore how user organizations are leveraging new technologies to support executive decision making.                         | <b>DB Expo</b><br>New York<br>12/2 - 12/6                       |
| Dec.<br>9   | Nov.<br>22                | Nov. **<br>27 | <b>Closer Look:</b> Software license management<br><b>IS Leadership Series Supplement</b>   | <b>Database/Client Server World</b><br>Chicago<br>12/10 - 12/12 |
| Dec.<br>16  | Nov.<br>29                | Dec.<br>6     | <b>Buyer's Guide to Futuristic Technologies:</b> Technologies such as virtual reality display devices and sophisticated pagers may have a place in many corporate applications. This Buyer's Guide will examine some of advanced technology products that actually may prove useful for IS managers and their staffs.They aren't just for fun and games anymore.<br><b>Monthly Supplement: Intranets</b>  |   |

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| Issue Dates | Ad Closings | Custom Publications  | Show Distribution & Ad Readership Study Issues |
|-------------|-------------|--|--|
| Aug. 12     | May 31      | <b>White Paper:</b><br><b>Supply Chain Management</b><br>(part 3 of 4-part Manufacturing Directions Series)  |  |
| Aug. 19     | June 21     | <b>White Paper:</b><br><b>RAID</b><br>(part 2 of 4-part Enterprise Storage Management Series)  | <b>Object World</b><br>Starch Study            |
| Sept. 2     | June 21     | <b>White Paper:</b><br><b>Financial &amp; Human Resource Applications</b><br>(part 3 of 4-part Enterprise Software Directions Series)                        |  |
| Oct. 14     | Aug. 18     | <b>White Paper:</b><br><b>Hierarchical Storage Management</b><br>(part 3 of 4-part Enterprise Storage Directions Series)                                     |  |
| Dec. 2      | Sept. 27    | <b>White Paper:</b><br><b>Network &amp; Systems Management: Adopt for Change or Get Out of the Way</b><br>(part 4 of 4-part Manufacturing Directions Series) | <b>DB Expo</b>                                 |
| Dec. 9      | Sept. 20    | <b>White Paper:</b><br><b>Systems &amp; Network Management</b><br>(part 4 of 4-part Enterprise Software Directions Series)                                   | <b>Database/Client Server World</b>            |
| Dec. 16     | Oct. 18     | <b>White Paper:</b><br><b>Client/Server Backup</b><br>(part 4 of 4-part Enterprise Storage Directions Series)  |  |

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## Commentary

## Cracking down on 'net use

Patrick Dryden



Network managers at one huge corporation must play "bad cop" to curb users' joyrides on

the Web. They're caught in a quandary because as much as they want to keep the network clear for real work, carrying out the management edict will draw users' ire and possibly stifle creative use of the World Wide Web.

Gloom shrouded the network performance engineer I visited at a multifaceted manufacturer, which must remain nameless due to corporate embarrassment and the nasty surprise that awaits certain surf-happy users.

The engineer — let's call him Angst — said tools that monitor network utilization revealed that Web traffic can hit 30% during work hours.

That means slow response time for order entries and vital information flowing through the company's 250 routers. Worse, tools that track connections proved that lots of Web browsing wasn't work-related.

"It's appalling what sites users visit for smut, sports and entertainment information, games and gambling," Angst said.

Corporate officials decided to shame employees who waste valuable bandwidth — their own productivity as well as network capacity. So Angst must compile a weekly Top 10 list that details which users spent the most time at such unseemly sites and broadcast it throughout the corporation. The list is due any day now.

"We need to limit this kind of activity but without blindsiding the users," Angst said. "They don't know we can monitor their connections."

#### IT could be worse

Some organizations have taken a harsher approach: automatic employee termination, according to a survey on strategies for controlling Web usage that is being compiled now by Gartner Group.

Firing and publicizing users who hit improper sites or spend too much time on the Internet are extreme reactions, but they aren't

uncommon, according to Clare Price, a senior research analyst at Gartner Group.

At the other extreme of the strategy scale, many more organizations try to cope by restricting access entirely.

For example, Marathon Oil in Houston authorizes just 600 of about 7,500 users to access the 'net, then screens Web addresses against a list of prohibited sites that is updated daily to keep pace with the wildly dynamic Web.

Some other organizations resort to providing "porthole" access to Internet resources, according to Price. In this approach, trusty researchers download appropriate information to a library that users browse on a private intranet.

#### Balance needed

Most organizations take the middle road, preferring not to curtail employee creativity by going overboard to control a resource that evolves as rapidly as the Internet, Price said.

They realize that the Internet opens a glitzy window out of boring cubicles. The Web offers another way to goof off, like hanging out in the breakroom, reading the newspaper, playing games or abusing E-mail. So similar rules should apply.

The IS group at Sprint in Westwood, Kan., for example, trusts its users to put Internet resources to work after exploring what's out there for as long as three weeks.

Such tolerant groups contact users who stray to inappropriate sites or exceed online time, warning that they risk violating the company's usage policy.

Sure, IS gatekeepers must guard network bandwidth vital to business processes. But they should be allowed to give Internet users a break. At the very least, the people who manage the network managers should be aware of the conundrum.

After all, it's just human nature to be curious and to push boundaries by ignoring policies.

*So how do you keep Internet usage from overrunning network capacity? Send a note to patrick\_dryden@cw.com.*

Dryden is *Computerworld's* senior editor of network management.

# Banyan unveils software utilities for StreetTalk

By Laura DiDio

Banyan Systems, Inc. recently unveiled a pair of software distribution and management utilities for its StreetTalk directory services. The products were designed to minimize management time and help businesses comply with software licensing agreements.

The two newest StreetTalk software components are NetWizard and StreetLegal. The NetWizard component, licensed from Attachmate Corp. in Bellevue, Wash., provides network administrators with centralized and automated software distribution and asset management capabilities.

Like NetWizard, the StreetLegal facility uses standard StreetTalk commands but adds software and license metering functionality. Banyan, in Westboro, Mass., licensed StreetLegal from longtime Vines third-party supplier LANShark Systems, Inc. in Columbus, Ohio.

Users and analysts familiar with both products said the utilities bolster the enterprise administration and management features of StreetTalk and represent potentially big cost savings for users.

#### NetWizard features

The NetWizard facility for StreetTalk provides:

- Centralized, automated software distribution
- Asset management via hardware and software inventory
- Software usage metering
- Remote workstation configuration and maintenance
- Immediate availability

"I'm very excited about StreetLegal. With 3,000 users attached to 60 Vines servers, I'm all for any product that will save my network administrators time and my company money," said Ted Kull, manager of LAN systems operations at Educational Testing Service, Inc. in Princeton, N.J.

#### Saving feature

Kull added that NetWizard has the potential to save his company "dozens of manpower hours each week" by eliminating the need to manually track software usage and license enforcement. "That reduces our maintenance costs by

10% to 20% and gives our administrators more time to spend helping the end users," he said.

Glen Gabriel Ben-Yosef, president of Clear Thinking Research, Inc. in Boston, agreed.

"People don't realize that having a single directory to keep track of various network and daily office functions — like automated software distribution and licensing — saves a tremendous amount of administrative overhead," he said.

But the one big drawback — in fact, the same drawback that is always mentioned in connection with Banyan — has been the company's inability to capitalize on the technical strength of its core Vines and StreetTalk directory and translate that into market share.

NetWizard is available now. Pricing is \$690 for a 10-user version, \$4,815 for 100 users and \$21,665 for 500 users. StreetLegal for StreetTalk is available electronically free of charge to monitor all Banyan software. The cost to monitor other vendors' software is \$150 for 10 users, \$650 for 50 users and \$2,500 for 250 users.

## Cisco's 7500

CONTINUED FROM PAGE 53

The company responded by announcing attractive financial incentives: discounts of \$4,000 to \$5,000 on the software and hardware costs incurred by moving from the 7000 to the 7500, which usually range between \$10,000 and \$14,000.

"Those were sweet deals that a lot of users took very seriously," said Bill Horst, chief at the General Services Administration's (GSA) communications branch in Philadelphia.

"Credit Cisco for doing some effective marketing, but I think that fear, uncertainty and doubt about the future of the 7000 worked in their favor as well," he said.

The GSA is considering upgrading a few of its 40-plus 7000s but would like Cisco to offer remaining users even better upgrade deals.

The GSA isn't alone. Cisco estimates that there are still 25,000 or so 7000 routers in use.

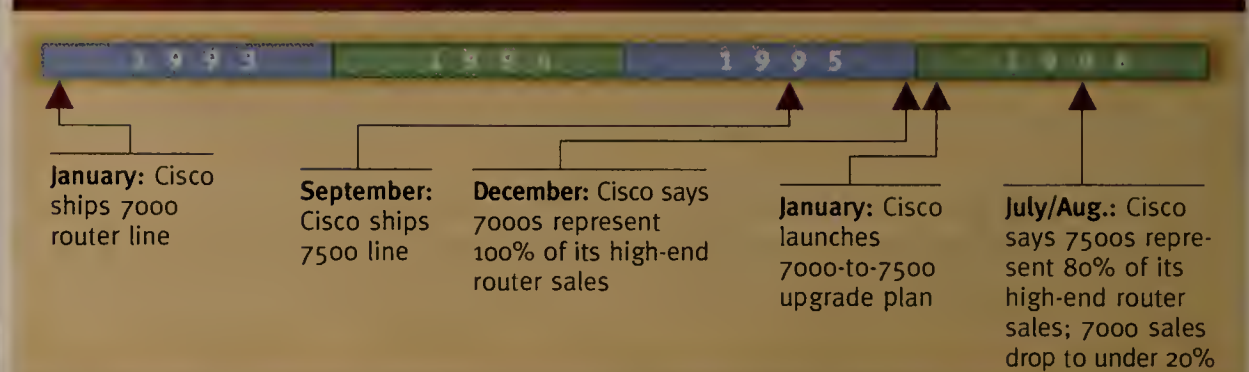
In the meantime, Palmer said, sales of 7500s represent more than 80% of the company's high-end router sales revenue, while sales of 7000s represent only 20%.

That 20% will likely decrease, Palmer said. In June, Cisco introduced a router designed to fill a gap between Cisco's midrange 4500 router and the 7500, targeting lower-end 7000 users.

But not all users are happy about the prospect of moving from the 7000s to the newer and more powerful 7500s.

A network manager at a West Coast food vendor, who requested anonymity, is replacing his firm's two 7000s with two Bay Networks, Inc. Backbone Concentrator Nodes. He said they are cheaper and give his company greater networking flexibility than the 7500s.

#### A tale of two Cisco router lines



Source: Cisco Systems, Inc., San Jose, Calif.



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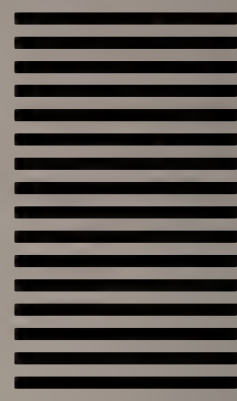
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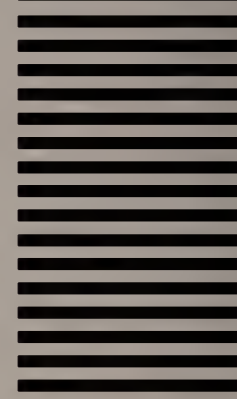
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## NetSuite

CONTINUED FROM PAGE 53

from Hewlett-Packard Co.'s market-leading OpenView Network Node Manager and link data supplied by other vendors to a product specification.

But NetSuite users said they like the way the tool validates network connections by verifying the ports or modules supported by a particular vendor's device when they diagram a network. That provides a unique advantage that renders competitors' software "basically network-aware drawing packages," according to Dave Passmore, president of Decisys, Inc., a network consultancy in Sterling, Va.

"Managers need to quickly and easily combine logical connection information,

gained by polling each device, with the actual physical configuration and layout. Then they won't have to scramble for a good map when they have to restore service or propose an upgrade," he said.

NetSuite expects to ship this kind of tool, NetSuite Professional Audit, by December. It can poll network segments and fetch data from HP's OpenView, Microsoft Corp.'s System Management Server and other tools. It will enter beta testing next month.

"If this autodiscovery works, then I can run it before my meetings with managers to present an up-to-date diagram," said Steve Wu, senior systems engineer at Tullett & Tokyo Forex, Inc. in London.

Brokers constantly move their desks and network connections at Wu's office of the international brokerage firm. "They may be on the same logical network, but now they work from a different hub. I need to keep up with how many ports are available

on each hub," Wu said.

NetSuite's upcoming option should speed the process of diagramming some 2,500 nodes, said Jim Lambright, engineer/analyst in the network operations group at Blue Cross/Blue Shield of Texas in Dallas.

"Then I won't have to walk over to another building to check a bridge or hub, and I can poll for a single device address or range of addresses on a segment to fill in the blanks," Lambright said.

## New Products

Groupe Sagem has introduced Meet-Me Light, a videoconferencing product for Power Macintosh computers.

According to the Cupertino, Calif., company, Meet-Me Light lets users with videoconferencing room systems or hardware-based desktop boards extend the use of videoconferencing within the company without buying dedicated H.320-standard hardware for each computer.

Meet-Me Light requires a Power Macintosh and video digitizer, 16M bytes of RAM, an ISDN connection line, a video camera and a microphone. Pricing starts at \$299.

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Document Control Systems, Inc. has introduced MasterControl 3.0, a document control product.

According to the Salt Lake City company, MasterControl 3.0 is a Windows-based application designed to meet all document control requirements of ISO 9000, QS 9000 and FDA GMP standards. It creates a secure electronic vault for storing documents created in any application with access to documents controlled on a user-by-user basis with unlimited security levels.

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Microsoft's Internet Explorer 3.0 puts the heat on Netscape's Navigator, 60

# The Internet

59

The Internet

Some use 'desktop' platforms as small Web servers

## Taking the low road

By Kim S. Nash

Server operating systems, such as Unix or Windows NT Server, aren't always the right way to host World Wide Web applications. Some users have opted to run small-fry Web programs on desktop platforms instead.

Low-end operating systems, such as Microsoft Corp.'s Windows 95 and Windows NT Workstation as well as Apple Computer, Inc.'s Macintosh system, cost less than their high-end brethren, users said, but can still handle midsize Web applications for small workgroups.

Small departments at Harris Corp., for example, run internal Web sites on Windows 95, said Sheryl Olguin, a lead software engineer and head of the Web Advisory Council at the Melbourne, Fla.-based electronics company.

Most often, groups have created small, temporary intranets, such as project management systems for short-term undertakings, Olguin said.

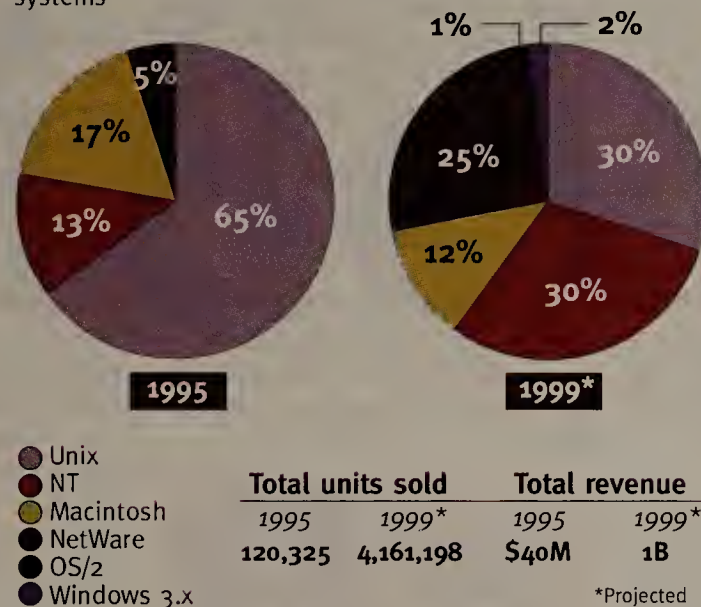
Corporate developers also like the

idea of Web servers for single-user operating systems. Without buying an expensive multiuser server version, they can load a Web server onto a laptop or PC to build intranet applications, said Todd McGuire, a consultant at Raymond James Consulting in Denver. In

able a beta-test version of its FastTrack server for Windows 95. The \$295 product is due to ship in October and will be bundled with Navigator Gold, which is a browser with extra development tools. The bundle is \$100 to \$200 less than other Windows 95 Web servers.

### Web server shipments worldwide

Both NT Workstation and NT Server will gain Web ground, but users will buy fewer Web servers for desktop operating systems



### No frills

But FastTrack lacks some features of pricier rivals. Users of O'Reilly & Associates, Inc.'s \$499 WebSite, for example, get 90 days of free technical support and a built-in search engine.

Quarterdeck Corp. in Marina Del Rey, Calif., offers Web servers for NT Workstation and Windows 95.

Microsoft doesn't offer a Web server for its desktop operating systems because they were designed for individual users, not as servers, according to Mark Murray, director of corporate public relations. He said NT Workstation was "designed to maxi-

mize performance for an individual user who is launching multiple applications simultaneously. The bulk of the processing power is devoted to that function, not to server functions."

## Web wars

Netscape recently complained to the U.S. Department of Justice about alleged anti-competitive moves by Microsoft in the Web server market.

The complaint followed an exchange of nasty letters — in one of which Microsoft asked Netscape to stop using a "misleading" marketing chart that compares price and performance of Netscape's FastTrack Web server running on NT Workstation to that of Microsoft's Internet Information Server on NT Server.

Netscape claimed that licensing and technical limitations that restricted the number of users who could connect to an NT Workstation were designed to give Microsoft an unfair advantage in Web server realms.

Microsoft revoked the technical block — but not the license restrictions — after complaints from O'Reilly & Associates and other companies that sell Web servers for NT Workstation.

They claimed that Microsoft was trying to force users who wanted to run sizable Web sites on NT to upgrade to the more expensive NT Server operating system. With NT Server, Microsoft bundles its own Web server for free.

Last year, the Justice Department investigated the bundling of access software for The Microsoft Network with Windows 95 but didn't block Windows 95's release.

A Microsoft official called Netscape's action "a publicity stunt."

— Kim S. Nash

## IMAP delivers improved E-mail

By Tim Ouellette

Sun Microsystems, Inc.'s recent delivery of an Internet Mail Access Protocol (IMAP) mail server and last week's IMAP interoperability tests are helping raise Internet electronic mail to the next level.

IMAP gives users more flexibility in accessing and managing their Internet mail compared with the Post Office Protocol-3 (POP-3) used in most E-mail clients and servers today.

Delivery of Sun's Solstice E-mail server heralds more commercial support for the IMAP standard, which has been used mostly in the university environment where it was developed. Al-

though a few other vendors have begun shipping IMAP servers, Sun is the first major vendor to deliver on its IMAP pledge (see chart).

Meanwhile, the Internet Mail Consortium ([www.imc.org](http://www.imc.org)) conducted formal interoperability tests among IMAP server products last week in San Jose, Calif.

IMAP lets users access their messages on a server and choose which messages, or parts of messages, they wish to download.

"Anyone who has used a POP-3 mail client is waiting for IMAP," said Eric Arnum, editor of "Electronic Mail & Messaging Systems," a Washington newsletter. POP-3 can also incur large telephone charges by downloading

huge mail folders and clogging slow phone lines, he added.

Still, interest in IMAP among users is growing slowly.

But, beta testers gave Solstice — and the general move to Inter-

net mail standards — a thumbs-up.

"I like [Sun's] commitment to standards," said Terence McCarthy, managing director at Neoteric, Inc. in New York, who runs the Solstice Internet Mail Server. "There will finally be an alternative to the Big Three [Novell, Inc.,

Microsoft Corp. and Lotus Development Corp.] that is really open."

### Performance match

And the performance lives up to that of proprietary systems. "We beat it up," McCarthy said of Neoteric's testing of Solstice.

But at the same time, IMAP isn't easy to implement. The standard is more complex than POP-3, said David Crocker, principal at Brandenburg Consulting in Sunnyvale, Calif. He said it requires more effort on the vendor's part to create IMAP-compatible applications.

But what it delivers, along with being a superset of POP-3, may make IMAP the ultimate standard of choice for vendors — so they won't have to write applications to both specifications, Crocker said.

### Mapping IMAP

Vendors shipping or planning to ship IMAP-supported servers:

| Vendor          | Product                   | Time frame                  |
|-----------------|---------------------------|-----------------------------|
| SunSoft         | Solstice                  | Shipping                    |
| Isocor          | N-Plex                    | Shipping                    |
| TeamWare        | Internet Messaging Server | Shipping                    |
| Microsoft       | Exchange                  | Planned for later this year |
| Netscape        | Mail Server 2.0           | Planned for later this year |
| Hewlett-Packard | OpenMail                  | Next year                   |



# Explorer gains ground

In race against Navigator, Microsoft's Internet Explorer has more features, shaky performance

By Garrett N. Ray

The lengthy beta-testing process for Microsoft Corp.'s Internet Explorer 3.0 ended last week, and the result is obvious: Explorer is very close to becoming the front-runner in its race against Netscape Communications Corp.'s Navigator 3.0.

In early June, *Computerworld* compared beta-test versions of the two products and found that Navigator 3.0 maintained a slight edge over Explorer 3.0, particularly in terms of performance and adherence to industry standards. But two months later, Microsoft has made an apparent turn-about on the standards issue. Explorer's performance has markedly improved, although it is still imperfect.

## Hot off the line

For this review, we tested Explorer 3.0 Builds 1154 and 1155, which were compiled only days before the formal launch and final delivery of the program last week. Build 1155 was considered the "release" version of Explorer by Microsoft officials, but it and Build 1154 showed aberrant behavior during testing.

In terms of features, Explorer 3.0 matches those of Navigator 3.0 and adds a host of extras. Explorer 3.0 includes Internet mail and news readers; online chat; a shared whiteboard and Internet telephony utility; full Java support, including a high-speed, just-in-time Java compiler; Virtual Reality Modeling Language (VRML) support; and support for several full-motion video and audio formats.

The Explorer browser includes Hypertext Markup Language (HTML) enhancements that aren't in Navigator 3.0. Specifically, Microsoft has included support for the HTML 3.2 standard in Explorer 3.0.

One useful enhancement to HTML 3.2 — and thus to Explorer — is Cascading Style Sheets. They let Web authors define a distinct "look and feel" for HTML pages through font specification, typographic control and so on. Explorer also supports the World Wide Web Consortium's HTML standard for tables.

Multimedia support is provided via Explorer's Active Movie facility. Active Movie is an integral Explorer feature and supports more audio and video formats than Netscape's embedded

and plug-in components, such as RealAudio and QuickTime.

Like Navigator 3.0, Active Movie supports AVI video and the WAV, AU, MIDI and AIFF audio formats. However, Explorer's Active Video also includes support for MPEG audio and video and for a variety of streaming formats. Because of this broad support, developers and users can be nearly certain that Explorer will han-

dle whatever audio or video formats are thrown its way.

Explorer's "progressive playback" feature requires a bit more manual twiddling than do

streaming video and audio, but it seemed to be quite functional otherwise.

Explorer also supports the VRML 1.0 standard plus enhancements. Navigator's Live3D supports the VRML 2.0 standard. So Explorer wouldn't execute VRML applications downloaded from the Netscape Web site.

## Conferencing

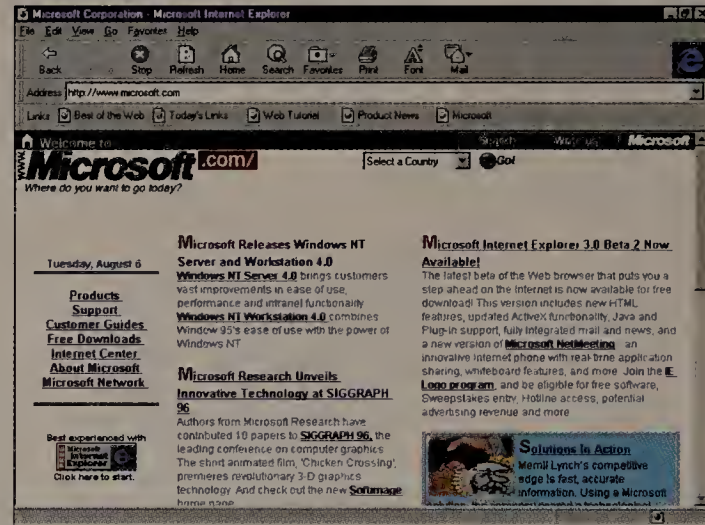
The three forms of online conferencing and communication supported by Explorer — an interactive whiteboard, text-based chat and Internet telephony — are collectively called Net Meeting. All functioned as advertised. Even on a dial-up, 28.8K bit/sec. modem, the telephony facility was reasonably adequate for Internet voice communications.

Added to this final release of Internet News is an off-line capability that allows downloading of messages, threads or entire newsgroups to the user's local system. News threading didn't seem as carefully implemented as is normally the case in other, dedicated newsreaders, though it wasn't clear if this was a problem with Explorer or with the Microsoft news server at msnews.microsoft.com. But other news servers exhibited similar threading difficulties with Internet News.

## Performance problems

On the downside, we experienced multiple performance problems with Explorer itself, although it is worth noting that this is effectively Version 1.0 of a dramatically revamped Explorer.

For example, we experienced problems connecting to a variety of both well-known and obscure Web servers. Explorer's status icons performed



◀ A new user interface is the most obvious improvement in the features war Microsoft's Explorer is waging against Netscape's Navigator

erratically when we retrieved Web pages, and pages occasionally stopped loading midstream. In short, there were several problems that seemed reminiscent of a Version 1.0 product. Comments on the Internet newsgroup microsoft.public.internetexplorer.beta.win95 indicated that other users also experienced problems installing and uninstalling Explorer.

For example, the Explorer cache directory and files aren't removed by the Uninstall routine. Microsoft officials said these problems would be fixed.

Microsoft's Internet Explorer 3.0

Overall grade: **B+**

|                     |    |
|---------------------|----|
| Multimedia          | A  |
| Graphics support    | A  |
| Extensibility       | A  |
| Platform support    | B+ |
| Third-party support | A  |
| Usability           | B  |
| Performance         | B- |
| News                | B+ |
| Mail                | A  |

\*If performance improves, A-

## ActiveX support

Another important issue to consider is Explorer's ActiveX support. With ActiveX, Microsoft faces its biggest hurdle and its sharpest edge over Navigator 3.0.

Like Netscape's Plug Ins, ActiveX allows developers to enhance Explorer with add-on components. In that regard, both browsers are "extensible." But Microsoft's ActiveX is based very tightly on the company's Dynamic Data Exchange, OLE and Component Object Model technologies. Until now, ActiveX has been an explicitly proprietary technology under the purview of Microsoft.

Fortunately, Microsoft finally seems

to have gotten the message on proprietary standards. The company last month promised to entrust the ActiveX reference model to a nascent standards body called the ActiveX Working Group. The group will hold its first meeting next month, according to Microsoft officials. If the group remains independent, ActiveX may become a much-needed standard in this rapidly evolving technology area.

In the same fashion, Microsoft has recently overstepped the charge of "platform bias" with last month's announcement that third parties will provide full Explorer 3.0 functionality — including ActiveX — for Unix and Macintosh platforms by year's end.

An open, independent and cross-platform ActiveX standard should provide a new generation of applets, which could add needed functionality and breadth to the IS manager's Internet and intranet arsenal.

## Security issues

Finally, Explorer 3.0 delivers sophisticated security facilities, including Secure Sockets Layer 2.0 and 3.0; client and server certificates for Web authentications; and a variety of controls for Java, ActiveX and script downloading from foreign servers. A very important feature is Authenticode, which provides signed verification of ActiveX and Java applets that are to be downloaded to a user's system.

Individually, Explorer's gamut of enhancements and features is a potent enticement to Web users. And Microsoft's stated intention to turn to industry standards is an encouraging sign for Internet and intranet professionals. If the performance issues are addressed quickly and Microsoft's plans for standards and new platforms come to fruition, Explorer clearly will be on the road to browser dominance.

Ray is an Internet consultant and writer in North Conway, N.H. He will host a discussion forum on Explorer beginning today at [www.computerworld.com](http://www.computerworld.com).



“Now that my  
company is on  
the Internet,  
will a fancy  
port scanner  
algorithm make

# mincemeat

of my  
firewall?”

## DEFENSE

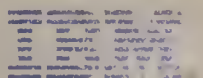
The Internet lets your company open its doors to millions of potential customers, partners and contributors and, unfortunately, some potentially dangerous hackers, crackers and online troublemakers.

That's why we at IBM have some dedicated hackers of our own. We call them “ethical hackers.” Working with the IBM Global Security Analysis Lab, these scientists explore the cutting edge of hacking techniques to develop better and better security countermeasures. And, as part of IBM's Security Healthcheck, they'll even try to break into your network (with your permission, of course) to look for weak spots and strengthen defenses.

Where the healthcheck leaves off, IBM's Emergency Response Service takes over. On call 24 hours a day, seven days a week around the globe, the response team makes itself intimately familiar with your network and systems ahead of time so that, in an emergency, they can respond quickly to close the breach and fix the problem.

To learn more about IBM's IT Security Consulting, Security Healthcheck, ethical hackers, the Emergency Response Service and all the products and services in the IBM SecureWay™ family, visit us at [www.ibm.com/security](http://www.ibm.com/security) or call 1 800 IBM-7086, ext. G121.

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# Strategies from an intranet evangelist

## How to sell the idea to management at your company and then implement it

Mellanie Hills spent seven years at JC Penney Co. building data warehouses and evangelizing them to top management. Then she helped lead the company's march to the World Wide Web as an intranet project manager, tailoring Web technologies to the needs of the company's public and private network.

Now president of Knowledgies, Inc., a consultancy in Plano, Texas, Hills has written a book about her experience and the experience of other webmasters she has interviewed at companies such as Rockwell International Corp., SAS Institute, Inc. and Turner Broadcasting System, Inc.

The following excerpt is from her book *Intranet Business Strategies*, due out next month from John Wiley & Sons in New York. Readers may contact Hills at [mhills@knowledgies.com](mailto:mhills@knowledgies.com).

### Potential for chaos

With all the hype around, everyone wants an intranet. Users can easily install this technology [on their own], so you should be aware that the situation can get out of control, as it did in the early days of client/server. However, the costs of going back and changing things are not nearly so great with web technology as they were with client/server.

To some [information technology] managers, the thought of users setting up their own webs is frightening; others see it as an opportunity. It's the issue of control vs. chaos. My own personal view is that letting the intranet grow from a grassroots effort is the best way to reach critical mass.

It may be easier for you in the long run if you take a leadership role. Get far enough out in front of your users that you can introduce this new technology to them. That way, you can assist all areas in doing things cost-effectively. In addition, you can help bring together all areas to deploy an intranet that meets the needs of your business.

When people have access to the information they need to do their jobs, IS will no longer have control. Users can take responsibility for creating and maintaining their own data [while] the IS group focuses on providing the infrastructure and services to the rest of the organization.

This suggests changes in the skills that IS people need. Though legacy applications will be around

for a long time, once you convert them to the web, we will not need as many of those kinds of programmers. With the move toward web-enabled databases as a site for all future application development, organizations will value web and database skills.

One of the most exciting changes is in the role of IS relative to business. IS is increasingly being viewed as a vital partner in the business, not just as a bunch of techies. An interesting theme is partnership at the executive level.



**"James Cash Penney used to always say that you can't sell from an empty wagon, so it's important to show them what you're selling."**

— Mellanie Hills, Knowledgies

... Several companies [Hill interviewed in writing the book] had a steering committee [that] typically consisted of [chief information officer], director of corporate communications and sometimes the director of human resources. In a few cases, some other executive, such as a director of engineering or research and development, was a member.

### On customer support

Here are some ways to use an intranet for customer support:

- Put all the information you get from customers onto your intranet so that anyone — customer support, product development, sales, marketing and manufactur-

ing, for example — may use it. This information could include names, addresses, products [used], problems they are having, things they want more information about, comments and suggestions.

- Put Internet applications on the intranet for review and comment prior to putting them on the external Web site.

- Publish problem status updates so support people can better respond to calls.

- Provide customers with order status when they call in or let them access it themselves on your intranet.

- Let customers support themselves by downloading products and patches from file transfer protocol servers and accessing your intranet for placing orders or accessing a support database for bug reports, documentations, etc.

### On building support for intranet projects

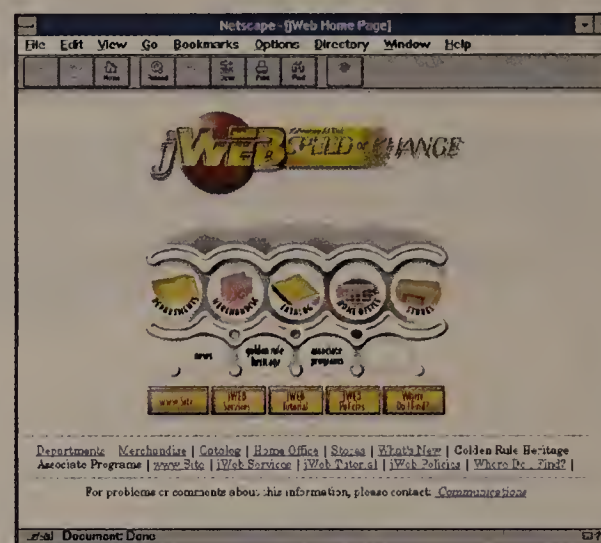
James Cash Penney used to always say that you can't sell from an empty wagon, so it's important to show them what you're selling.

You could describe it until you're blue in the face, and they just won't get it. Show them, and they'll understand.

Once we started showing some of the executives [a demo version of the intranet site], they would typically get very excited about the prospects and would want a browser and access to the Internet and intranet right away. Usually, the next step was a demo for those executives' staffs and then their whole departments. The excitement was contagious.

Over several months, I did more than 100 demos and presentations, including to the company's management council and board of directors. ... People don't always volunteer to be on a fun thing to do that the team grew to 55 web publishers and techies in just a few months.

In one of our earliest demos, just before Christmas, we were showing our brand-new external Web site and talking about how we could use it. One of our executives mentioned that [the] catalog [department] had a new shipment of Power Rangers, the most popu-



JC Penney used a Web site to advertise a new supply of Power Rangers after the Christmas catalog had shipped

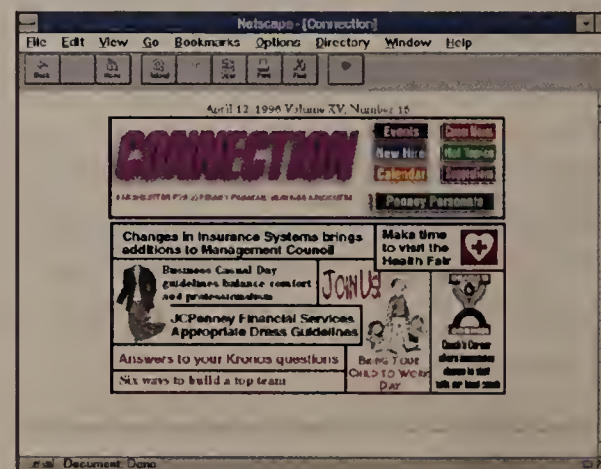
lar Christmas toy at the time. It was too late to get them into the catalog, so he suggested that we put them out on the Internet. With a wink of our CIO's eye, one of my colleagues left the demo to go see the person in charge of the Power Ranger figures. He received approval and got a set of the toys, which he took to get photographed. He created the HTML page while he waited for the photo. When the photo was ready, he got everybody together for approvals, and it was up on the Internet in under three hours from the time it was first mentioned.

As we presented our demos, we repeated this story to convey the point of just how quickly you can utilize this technology.

### Get end users, too

Recruit support from web publishers — those people in your company who have content they wish to publish on the intranet. Recruit an audience of users — those people who will use the content the web publishers create.

As people start spouting ideas for using the intranet, it is important to start turning these ideas into real applications for the next set of demos. The contributors will be really proud if, by the next time they see the demo, you have incorporated their ideas into it.



A department home page can serve as a demo, with an employee locator, manuals and benefits information

Give them credit for the ideas, and you have instant intranet evangelists.

### Show them what you can do for them

Create a home page for your department. Create an employee locator. Set up a variety of pages showing procedures manuals, benefits information and samples of all the other information you have gleaned. Tie HTML pages to databases. ... If you don't yet

have the tools or resources to tie the web to databases, you can create a mock-up simply to show the concept. There is nothing deceptive in telling people that what they are seeing is a mock-up — it's just to illustrate the concept since you don't yet have the resources. Add some graphics, sound and video clips. ... You'll be able to catch people's attention and communicate your message more effectively.

### What will happen to productivity if we give employees Internet access?

This is a subject that seems to be fraught with lots of emotion in every company that deals with it. Despite the enthusiasm for the Internet, there was a lot of fear and concern from managers over opening up the company to access to the Internet. ... We soon determined that really wasn't much of an issue. You go through a few weeks where people are in the fascination stage, like overwhelmed children on Christmas morning, flitting from toy to toy. As soon as the novelty wears off, people settle in to using the Internet to find what they need. In the process, they find that the fascination stage has trained them to find what they need.

### How secure are intranets?

We stressed that [the Internet and intranet] were physically separate in order to keep out unwanted access. We didn't want some executive getting paranoid that people on the outside could access our sensitive corporate information. That would have killed the project before it really got started, so we dealt with that concern right up front.



# Evil Empire

“Now that my company

is on the Internet,

will I have to explain

to management

what a Resident

Stealthed

virus is and

why it brought down

the New York office?”

## ANTIDOTE

Monkey. B...Queeg...Screaming Fist. Right now there are people out there making newer, smarter computer viruses at the rate of about four a day. And the more your company ventures onto the Internet, the more you open yourself up to attack.

Fortunately, we've got the world's leading antivirus researchers on our side: a whole lab of men and women whose aim in life is to thwart viruses before they can do damage. They've developed an integrated suite of antivirus products and services you'll find in our SecureWay™ family, including the most advanced security measures in industry history.

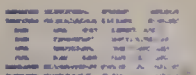
IBM AntiVirus software detects more than 6,800 strains of computer viruses, including polymorphic viruses and others previously thought to be undetectable. The system also provides false alarm elimination and infection verification. It will alert you to suspicious virus-like activity

anywhere on the network. And it works across multiple client/server operating systems from Windows® 95, Windows 3.1, DOS and OS/2® Warp to Novell NetWare® and Windows NT.™

As an IBM AntiVirus customer, you get signature updates, Bulletin Board support and you can subscribe to comprehensive quarterly software upgrades and get a fully updated antivirus product every three months, including the latest polymorphic fixes.

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Wang acquires I/Net,  
seeks to beef up  
support services, 66

# Corporate Strategies

65

Corporate Strategies

## Hold 'em accountable



By Julia King

Your mother was right. Mind the pennies, and the dollars will mind themselves.

That is precisely what happened at \$5 billion Canada Post Corp. — that country's counterpoint to the U.S. Postal Service — which has saved \$6 million under a year-old information services chargeback system.

The payment scheme holds business groups accountable for costs associated with each telephone they install or report they generate.

"The rationale for the chargeback system is really quite simple. Users are the

ones who actually drive the costs, so the [budget] decisions should also be put in their hands," said Bruce MacLeod, national director of

**Chargeback system, page 67**

**Canada Post's Bruce MacLeod: Chargebacks can give users a clear look at their IS budgets**

## Businesses may vie for 'net seal of ethics

By Gary H. Anthes

The only person who gets less respect than a used car salesman may be a used car salesman on the Internet.

But the Council of Better Business Bureaus, Inc. (CBBB) in Arlington, Va., plans to take the sleaze out of the 'net. The council hopes to build an "ethical online marketplace" by offering a digital seal of approval to online businesses that meet strict criteria for truthful advertising, quality service and fair handling of customer complaints.

Beginning in January, companies that have passed Better Business Bureau (BBB) checks may display an encrypted

**Better Business Bureau, page 67**

### To earn the BBBOnline seal, companies must:



• Submit to a site visit

• Participate in an advertising self-regulation program and correct any ads found to be wrong

• Handle complaints online if filed that way by the BBB

• Agree to binding arbitration if customer requests it

• Have no unanswered complaints at the BBB

• Have no complaint patterns that would indicate uncorrected problems

• Have no significant ethical failures by management

• Be in business for at least six months

• Provide substantial information on company ownership and management

Source: Council of Better Business Bureaus, Inc., Arlington, Va.

## ANX-ridden

Coalition of automakers will roll out a virtual private network that may direct the future of online commerce

By Mitch Wagner

**A**n automobile industry consortium is developing an Internet commerce network that may have sweeping implications for anyone who wants to make the Internet reliable enough for business use.

Chrysler Corp., General Motors Corp. and Ford Motor Co. by year's end plan to link their intranets with a limited number of suppliers and business partners.

The resulting network will be a pilot version of a global project called the Automotive Network Exchange (ANX). It is being sponsored by the Automotive Industry Action Group (AIAG).

What puts the ANX on the cutting edge is that participants will link to the system through multiple Internet service providers.

If the auto group can pull off the ANX, it will be well on its way to fixing the reliability and response-time problems that have plagued the Internet.

Previous Internet-based virtual private networks have required communicating parties to link up via a single Internet service provider.

Some private networks bypass the public Internet entirely and rely on leased lines to connect participants.

### Widespread network

The AIAG hopes its new network will encompass several hundred companies by the middle of next year and several thousand companies by the end of next year.

The network will be used for electronic data interchange, exchanging big engineering files and other forms of business-to-business electronic commerce.

"We don't want our entire industry locked into one company doing our networking," said Robert Moskowitz, a technical support specialist at Chrysler and the company's lead representative on the project.

ANX administrators will designate a list of certified service providers. Companies that want to join the network will be instructed to select one or more of the certified providers from the list.

The list of certified providers will be made

public and could emerge as a kind of Good Housekeeping Seal of Approval for quality in Internet service providers.

The certified providers that make up the ANX will be connected to one another through ANX-maintained exchange points. The first, for the pilot project, will be located in Southeast Michigan.

### Creating an infrastructure

The ANX will be run by an overseer, or company selected to manage and maintain the network. The overseer will be announced in mid-September.

One of the overseer's first tasks will be to outline the criteria for designating certified service providers in terms of responsiveness to user



complaints, data throughput, the amount of time it takes for data to travel between points on a network and the amount of time it takes for data to flow between two different Internet service providers' networks.

The latter item would be a breakthrough for the Internet. Until now, Internet service providers have been willing to provide only limited assurances of throughput on their own networks and no assurances at all for data that flows between two Internet service providers' networks.

"Something like this is part of the general maturation of the Internet," said Steve Dieringer, a vice president and information systems manager at Banc One Corp. in Columbus, Ohio.

"There's a lot of intercompany traffic that's time-critical, and you can't have it held up because some guy on the other side of the country is downloading sound clips from a movie site," Dieringer said.

Banc One isn't participating in the ANX, but Dieringer said the bank will watch the project with interest.



# Wang enters network outsourcing arena

By April Jacobs

Wang Laboratories, Inc.'s recent move to acquire I/Net, Inc., a network management outsourcer, plays to users' growing need to manage the sprawl of their distributed computing networks.

Wang, in Billerica, Mass., already provides desktop outsourcing services. With its acquisition of I/Net in Kalamazoo, Mich., Wang will be able to move into the network management arena and provide more of a one-stop shop to its customers, said Perry Harris, director of management

strategies at The Yankee Group in Boston.

British Petroleum Co. (BP) in London outsourced its network management to I/Net when it restructured its information technology operations and business processes in 1991 and 1992. So far, the move has saved BP about \$300 million annually,

said Andrew Robertson, an independent consultant who worked on the BP project.

"It was successful. We got better performance and higher productivity with access to new technologies and greater expertise," he said.

"Generally speaking, there are two major trends in the outsourcing market," Harris said. One is a continued growth rate in outsourcing that tops 20% per year. Network outsourcing, in particular, is growing at a rate of about 60%, he said.

## The outsiders

| I/NET CLIENT                   | NETWORK-CENTRIC OUTSOURCING SERVICES     |
|--------------------------------|--|
| Consolidated Natural Gas       | Desktop and networks                     |
| Southern New England Telephone | Desktop, networks and the internet       |
| British Petroleum              | Global desktop and networks              |
| NASA                           | Global network management and operations |
| LTV Steel                      | Desktop and networks                     |
| Department of Defense          | Global network management                |

Source: Wang Laboratories, Inc., Billerica, Mass.; The Yankee Group, Boston

That robust growth is tied closely to the move toward distributed computing environments. Those environments are complex and require greater expertise to manage them, he said.

"From a user and vendor perspective, it's more difficult to manage these networks because they're physically distributed," Harris said.

## Network shift

By the end of the 1980s, company networks were largely based on central data centers and associated client/server environments. By 2000, that mix will shift to include 50% desktop and client/server configurations and 50% data center operations.

"As companies become more geographically dispersed, it becomes expensive to manage. It's best handled by third parties," says Bob Flanagan, director of Internet strategies at The Yankee Group.

Not that network outsourcing comes cheap, said an analyst at Meta Group, Inc. in Stamford, Conn. According to the research firm, companies that want to outsource should budget about 10% of the total cost of any contract to manage that contract from within so that expectations are met on both sides.

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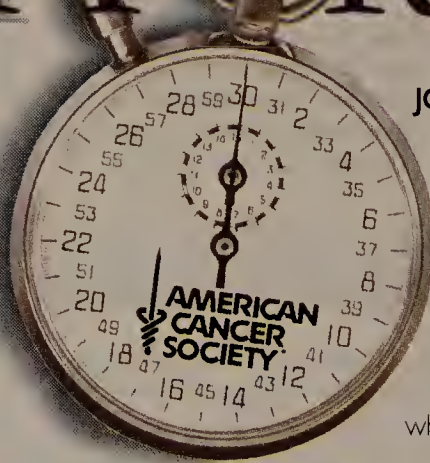
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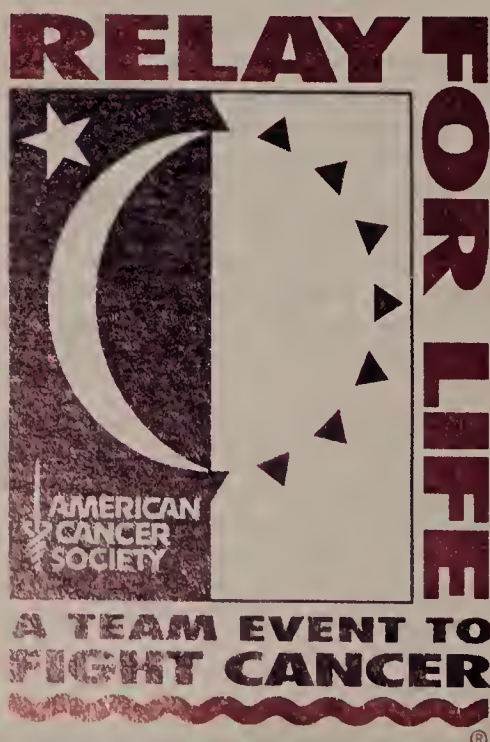
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# They still want teller service

Bank branches are thriving and surviving despite deployment of ATMs and self-service technology

By Kim Girard  
and Thomas Hoffman

Pundits who predicted that customers' use of bank machines and other self-service technology would lead to widespread branch consolidation were wrong — at least for now.

Instead, electronic banking has increased the overall amount of banking that people do face-to-face with branch tellers and at automated teller machines (ATM), said Jim B. Moore, president of Mentis Corp. a research consultancy in Durham, N.C.

## Enthusiasm increases

"As you increase new delivery channels, you make it easier for the consumer to transact, so they do it more often," Moore said. "And new channels don't eliminate the need for old ones."

For example, he said, 64 billion checks were written last year — an increase of 2.8% from 1994 —

despite the growing popularity of debit cards, which can be used as bank cards and instead of checks.

Larger financial institutions are adopting new technologies at a feverish pace to remain competitive.

But the number of bank branches in North America continues to rise.

## Electronic commerce

Officials at the Top 100 bank holding companies in the U.S. said they plan to add branches this year; 53% will add full-service branches, and 42% plan to add minibranches, according to the "Fifth Annual Special Report on Technology in Banking" by Ernst & Young in New York.

Citibank, for example, has remodeled 44% of its 1,200 branches worldwide since the late 1980s, a bank spokeswoman said.

This occurred despite the fact that industry gurus predicted that ATMs would markedly decrease the need for branches by 1995.

"ATMs were sold solely on cost

reduction," Moore said. "We were going to reduce costs by bringing in ATMs, and it didn't happen."

Instead, the larger banks are closing some branches — mostly because of mergers and consolidations — but also expanding services by establishing minibranches in supermarkets and retail centers.

## Burning at both ends

"I'm not one of those zealots who thinks that branches are going to disappear in the next five years," said Lloyd F. Darlington, chief technology officer at Bank of

Montreal in Toronto.

"We'll be doing more value-added services" in branches where customers want direct contact with a teller, Darlington said.

Bank of Montreal had 1,183 branches in 1990; it currently has 1,149 branches.

The number of bank branches "is not going to decline significantly," said Bob Landry, a technology analyst at The Tower

Group, a Wellesley, Mass.-based banking consultancy.

Despite overall market trends, Pat J. Swanick, executive vice president of electronic commerce at Key Corp. in Cleveland, reported a dip in branch numbers.

Key's bank branch numbers declined from 1,500 two years ago to 1,280 branches now. Swanick said that number will drop to 900 in the next several years.

## Chargeback system

CONTINUED FROM PAGE 65

information and communications.

What is uncanny, he noted, is the amount of equipment and level of services that users decided they could do without once they held the power — and the responsibilities — attached to the information systems purse strings.

## Cutbacks

For example, between April 1994 and this past March, the number of mainframe-attached terminals and printers dropped from more than 6,000 to about 4,500. The number of telephones in Canada Post's 22 mail processing plants, seven regional sales offices and five regional headquarters declined by 2,000 in less than a year.

Overall, the number of systems resource units (SRU) — the main metric by which IS usage is measured — dropped from 13,000 to 11,000 in the first six months (see story below).

On the operations side, users pinpointed where to make cuts by reviewing longstanding reporting

practices, then dividing the reports into "must have" and "nice to have" categories, said Jacques Cote, manager of finance and mail operations.

"After that, we looked at the cost of the must-haves to see if there was a cheaper way," he said. Often, there was.

Production reports that used to be generated daily on a mainframe are produced ad hoc on desktop PCs. Phones and PCs were removed from vacant desks and conference rooms.

"We used to have a telephone or PC there just in case somebody showed up," Cote said. But not anymore, he said.

These and other cost-cutting measures have worked to decrease his department's overall IS costs by about 20%, Cote said.

The IS department's role also has changed. "IS now acts as interpreters," said Gilles Farley, vice president and chief information officer. "One of their roles is to make sure clients understand how charges work and to work with them to reduce the charges."

## Better Business Bureau preps ethics check

CONTINUED FROM PAGE 65

"BBBOnline" seal at their World Wide Web sites.

The online commerce of the companies will be monitored by the 150 Better Business Bureaus in the U.S. and Canada.

Any company that fails to adhere to BBBOnline standards will lose its seal.

## Taming the wild Web

"The CBBB is bringing a system of ethical practices to a medium that at times looked like the Wild West," said John Sarsen, CEO of the Association of National Advertisers, Inc. in New York.

Car rental giant Hertz Corp. said it will be among the first to earn a seal.

"We plan to offer bookings through our home page. This will offer customers a statement of our values," said Paul Tschirart, senior vice president and general counsel at Hertz in Park Ridge, N.J.

But will it offer an advantage over competitors that are smaller but perhaps trying harder?

"Until such time as they join us," Tschirart said.

Consumers will be able to click on a merchant's BBBOnline seal and retrieve a "reliability report" on the company from the BBB's Web server.

They will also be able to go to that server and search a database of reports on close to 1.3 million companies.

To qualify for the seal, companies must meet nine criteria, such as having no outstanding complaints against them at the BBB,

agreeing to participate in the BBB's advertising self-regulation program and agreeing to submit to binding arbitration if it is requested by a disgruntled customer.

The firms also must agree to a site visit by an official from the local BBB.

"We want consumers to feel confident that if something goes wrong, we know where the company is — that it isn't just some computer out in cyberspace," said Steven J. Cole, senior vice president and general counsel at the CBBB.

The charge for getting a seal of approval hasn't been determined, but it will be set on a sliding scale depending on company size, Cole said.

He said the digital seal of approval concept is one of self-regulation, the only kind that the Internet culture would tolerate.

## Hardware

BBBOnline is being sponsored and partly funded by nine companies, including AT&T Corp., Hewlett-Packard Co. and Netscape Communications Corp.

The system will comprise mirrored Sun Microsystems, Inc. UltraSPARC computers and Oracle Corp. databases that hold "tens of gigabytes" of information, said Theresa Rinehart, manager of Internet services at the CBBB.

The 150 bureaus will use the Internet to send updates about local companies to the central Web servers by file transfer protocol, Rinehart said.

The servers will run Netscape's Enterprise Server software.

The data isn't confidential, but the servers will be protected by an Internet firewall, Rinehart said. "We don't want someone with a bad report hacking in to change it to a good one," she said.

## Branching out

- The number of financial institution branches increased from 82,726 in 1994 to 83,223 last year, a **1% increase**.
- The number of financial institutions in North America **declined 7% overall** during the same period.

## Webside service

Visit the Better Business Bureau at [www.bbb.org](http://www.bbb.org) or preview the online service at [www.bbbonline.org](http://www.bbbonline.org).

## How do they rate?

In 1993, Canada Post contracted with SHL Systemhouse, Inc. in Ottawa to provide all data processing, telecommunications and systems management under a \$1 billion, 10-year contract.

SHL bills Canada Post based on the number of desktop units and actual mainframe usage.

Internally, Canada Post's business groups also pay for mainframe usage on a metered basis. The primary mainframe

metric is the SRU. SRUs comprise CPU usage, tape activity and disk storage space, among other things.

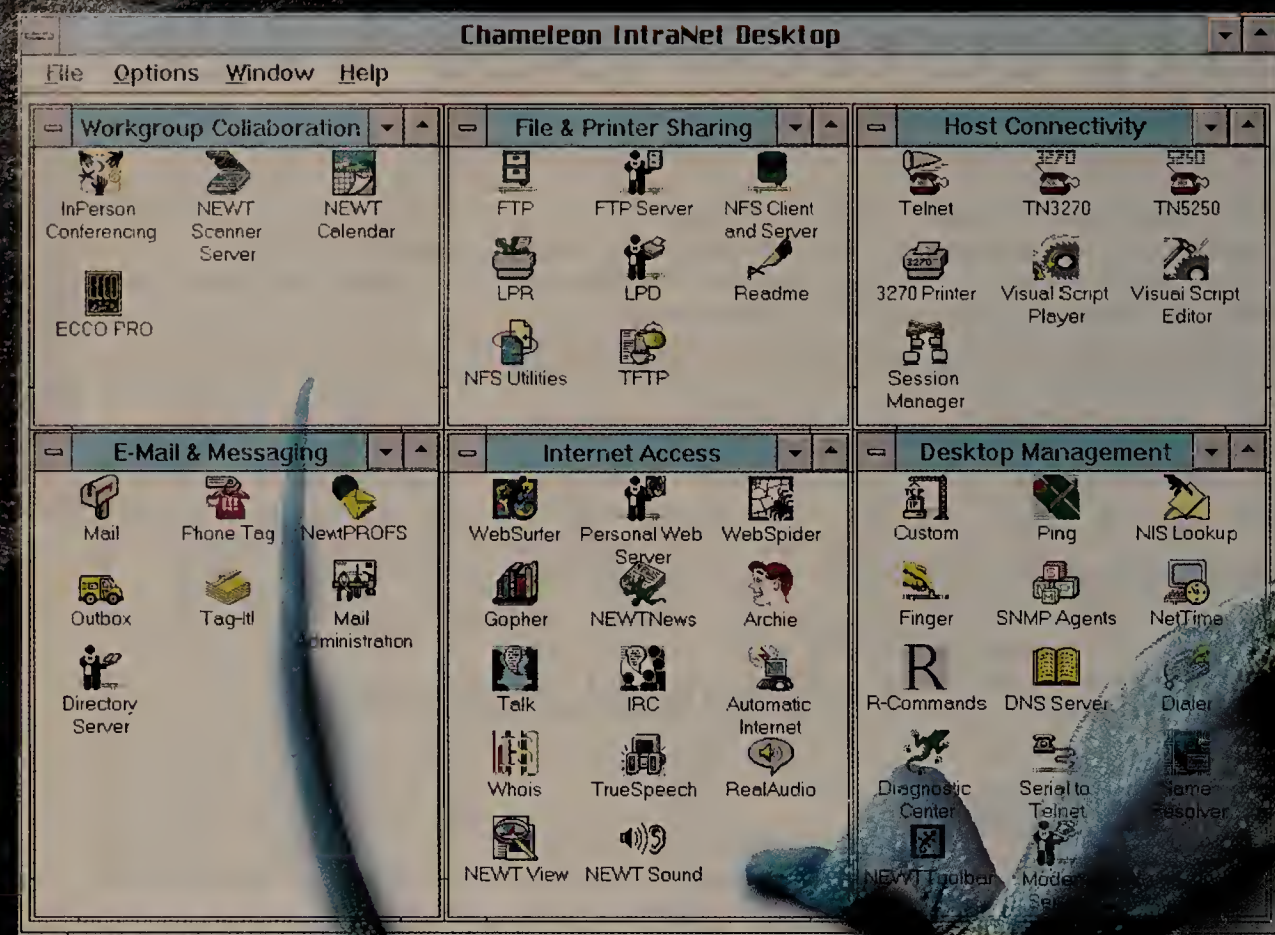
The SRU chargeback system, developed with SHL, also tracks usage by end user and by application.

Users are also charged set rates for other IS-related services, such as PC and telephone installations.

Rates are set annually and are uniform across Canada Post sites nationwide.

—Julia King






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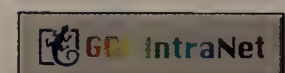
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**DON'T ASK, DON'T TELL**

Working IS moms are still apt to keep their family responsibilities close to the vest. Ms. MIS, page 72.

# Managing

# Tough Crowd

**You can jump through hoops making your IS organization treat users like valued customers. Your reward? The users will ask for more – and your budget may be cut.**

*By Robert L. Scheier*

**I**f you hope to score big points with management by making your IS organization more warm and cuddly, forget it. Even dramatically improving support or winning service awards might not win you much more respect or money.

Consider the Division of Information Technology (DoIT) at the University of Wisconsin in Madison. Five years ago, DoIT had an all-too-typical information systems reputation for pushing expensive, centralized solutions. "We looked anywhere else we could to get advice" about desktop systems and LANs, says Associate Dean of Students Roger Howard. Most campus departments "worked hard [to avoid] having to make contact with DoIT" and instead hired their own LAN administrators and support staff.

Facing irrelevancy, DoIT scrambled to treat its users like customers. Beginning in late 1993, it created a five-person strategic consulting department that consults key decision-makers so DoIT can tailor its plans to their needs. For the first time, DoIT began bidding for IS work, writing contracts detailing exactly what it would provide its customers and when.

DoIT did many of the right things, but users still don't trust it the way they would a true business partner. A recent meeting with DoIT personnel about a move to new quarters "was very positive," Howard says, because "they frankly pretty much stayed in the background. They were there to answer questions, [not] to sell a particular set of solutions." The dean's office

*Tough crowd, page 70*





# Tough crowd



CONTINUED FROM PAGE 69

took some of DoIT's suggestions but hired a departmental LAN administrator to handle the move.

Welcome to the club, says Frank Armijo, manager of distributed computing systems at Boeing Computer Services. In 1994, the Boeing Co. unit won a Help Desk Institute award for the support it provided to U.S. Department of Energy workers in Richland, Wash. Two years later, it's harder than ever to win money for training or even new computers. "It's almost [to the point] that you do it for your own internal satisfaction, for the knowledge that you're making a difference," Armijo says.

Faced with competition from out-sourcers or pressure from senior management, many IS organizations are struggling to become more customer-focused. That means understanding the business needs of users, giving them the solutions they want rather than what IS feels comfortable providing and remembering that those users can go elsewhere if IS doesn't deliver.

But no matter how customer-focused IS becomes, users and managers often turn around and ask for

more. Delivering quality service "is really only the price of entry" for an IS organization, says Dennis Privitera, executive director of the Help Desk Institute, an association of IS support organizations in Colorado Springs. Users still must be convinced, he says, that IS can do good work consistently, keep cutting costs and be trusted not to seize control of systems or data back from the users.

The Retail Automation Network Support Center at Chevron Products Co., for example, won the Help Desk Institute's Team Excellence Award two years ago for its support of cashiers and attendants at Chevron's 9,000 retail outlets.

Like DoIT, the Chevron support organization does many of the right things. It has performed customer surveys that showed, among other things, that cashiers cared more about the quality of help than whether support calls were answered on the first ring, says support center coordinator Mike DeGennaro. It screens technical candidates on the telephone to see if they're chatty enough to deal with low-paid cashiers who aren't used to speaking in technical terms.

What has DeGennaro's organization gotten for its pains? As part of a corporatewide downsizing during the past three and a half years, its staff has shrunk from 65 people to 43, and its training budget has been slashed by half. Softening the blow, he says, is the fact that Chevron this year began offering all employees financial incentives if the company reaches its cost-cutting goals.

It's much the same story at Boeing Computer Services. Among its achievements, it re-engineered its processes to cut the time needed to

establish a new network user account from five days to 20 minutes. But in the past year, the group's budget has been cut 20% as the number of users it supports has fallen to about 11,000 from a peak of 15,000.

Armijo says he's "relatively pleased" with his ability to maintain service quality but acknowledges that turnover has risen over the past few years. "It can get frustrating when the improvements you're making get recognized, but they also drive more [budget] cuts," he says.

How do IS managers provide ever-higher customer-satisfaction levels on increasingly tighter budgets? By finding low-cost ways to train their staffs, giving employees incentives based on corporate financial performance and emphasizing the emotional rewards of providing excellent service.

DeGennaro, for example, abandoned structured classroom training

to teach the material to others rather than lean on an instructor for help. DeGennaro cuts costs by teaming up with a Chevron credit-card call center to buy training in people skills. He also has put commonly asked nontechnical questions — which credit cards to accept, for example — on a voice-response system so the help desk staff doesn't have to answer them.

Boeing used some homegrown solutions to save money, Armijo says, such as an expert system developed by one of his technical consultants for tracking common support problems and solutions. "It cost us nothing to implement that," he says. Vendors wanted \$50,000 or more for similar packages. Now Armijo wants to make the system available over an intranet that can be built with low-cost software. It would include links to software vendors' home pages.

Benchmarking your IS organization to prove you're doing a good job and attaching a cost to support problems can often help squeeze more money out of management. But sometimes, Privitera says, "you have to cut somewhere, and it's easy to cut training costs." If worse comes to worse, he adds, an IS manager may be able to negotiate a quiet deal with his boss that he will be rewarded for maintaining a less-than-desirable, but measurable, level of service at a reduced level of funding.

And to keep himself motivated, he can remind himself that he still has a job, that he's helping his fellow employees or just that he and his staff are all in it together. "That sense of camaraderie — that sense of family, even — is what will pull the successful companies through all this," DeGennaro says. ■

Scheier is a *Computerworld* senior editor, management.



**FRANK ARMIO's Boeing Computer Services unit won an award in 1994 for its support service to a federal agency. But two years later, he says, it's harder than ever to win money for training or new computers.**

for a "cascade" process in which IS employees learn about a new application and pass on their knowledge to others. Typically, one staff member will have 30 days to learn about a product and boil down the critical information to a two- to three-hour course, DeGennaro says. That staff member teaches the material to another four to six people who, in turn, teach it to others.

Staff members learn better when they use this approach, he says, because they know they'll have to



## Outsourcing's fine print

**D**oes outsourcing have a hidden price tag? If so, how big is it?

Fred Joy, a senior research analyst at Meta Group, Inc. in Stamford, Conn., says customers should count on spending 5% to 7% of the value of an outsourcing contract to manage the outsourcer. That includes chores such as renegotiating service-level agreements when requirements change, resolving disputes and tracking the outsourcer's performance.

Such hidden costs scare many information systems executives away from out-

sourcing. They also come as a nasty shock to customers who assume that once the contract is signed, "the outsourcer will kind of take care of everything," Joy says.

But at least one customer says anyone who spends 10% or even 5% of his outsourcing budget on such chores is just plain inefficient.

Paul Kanneman, senior vice president and chief information officer at The Zale Corp. in Irving, Texas, says he spends "a very minuscule" share of his \$11 million to \$14 million outsourcing budget to manage Integrated

Systems Solutions Corp. (ISSC), which provides mainframe, wide-area network and communications services for the jewelry retailer.

Kanneman says his costs are lower because he spent time up front to carefully define in the contract what he expects of ISSC and how it and Zale will handle unexpected changes in requirements. It also helps, he says, that Zale has worked with ISSC for five years. And Zale chose one outsourcer rather than juggling multiple vendors.

Kanneman and Joy agree that outsource-

ing is cheapest to manage when the customer knows his own needs and IS capabilities.

"As senior executives, we ought to be paid to understand what our service levels should be" rather than rely on a team to renegotiate service levels, Kanneman says. "Companies that have a good handle on their own cost structures and service levels are in the best position to evaluate outsourcers' proposals" and track their performance, Joy says. — Robert L. Scheier

F.Y.I., page 73



# No brainer (nō brā-nər) n. 1. a decision requiring the cognitive capability of a common garden slug.

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mothers and  
housewives are the  
only workers who do  
not have regular  
time off. They  
are the great  
vacationless class."*

*- Anne Morrow  
Lindbergh*

# MIS Moms: Don't Ask, Don't Tell

Despite gains, working mothers are still leery of talking openly about family responsibilities

By Laura DiDio

**T**he dictum "Don't ask, don't tell" isn't confined to homosexuals in the military. Women in IS adhere to it every day. As they rise through the ranks of information systems departments, women say they're more apt to keep mum about family responsibilities unless, or until, they trust their immediate supervisors.

"Women are stuck between a rock and a hard place. If we stay home or leave work early to pick up a sick child, we're rotten employees. If we leave the sick child to go to work, we're rotten mothers," says Martha Starkey, a computer support specialist at BTU International, Inc. in North Billerica, Mass.

Starkey, the mother of a 6-year-old daughter, says she learned "very quickly" not to talk about family matters after losing a previous job because of downsizing. She was seven months' pregnant at the time. At her next job, she was leery of anyone calling her at home. "I didn't want anyone to know I had a child. . . I definitely felt that if a prospective employer knew I had a young child, it would work against me." At BTU, Starkey's supervisors have been very supportive and haven't hindered her advancement.

Starkey and other female IS managers say no one will come out and say you're being passed over for a promotion because of your child or children. But that fear, or reality, is always present, Starkey adds.

Take the case of an IS manager at a Midwestern Fortune 1,000 firm, who requested anonymity. Six years of IS experience notwithstanding, her supervisors subtly hinted, then more strongly suggested, that she swap her manager duties for another role more suitable to the demands of motherhood.

"They made it clear I would still have a job when I came back but wanted me to move into a slot where I didn't have people reporting to me 'until my child was a little older.' They were really slick about it, too: got the human resources manager — a woman — to speak to me about it. But I noticed fatherhood wasn't an issue for the man with four kids who moved into my old job." But she stayed because "it's a great job and I still have my same benefits and rate of pay — they weren't going to do anything so obvious that I could go to the [Equal Employment Opportunity Commission] and lodge a complaint."

Even single women without children such as Jill Baldassi, IS officer at a bank in the Northeast, say they feel that it's better not to talk about family responsibilities. "I wouldn't tell unless I was point-blank asked. Better to be safe than sorry," Baldassi says.

There's more than a touch of irony at work here. These defensive maneuvers — designed to keep

the so-called mommy track from hindering or even derailing women's professional advancement — come at a time when many businesses are more flexible about maternity leave, guaranteeing a woman's position or a similar job at the same salary; telecommuting; job sharing; and gradual return-to-work programs.

Baldassi, Starkey and Laurie Sheerin, MIS manager at Nynex Corp. in Middleton, Mass., all acknowledge there's been a vast improvement in attitudes and tangible action to address the needs of working mothers and mothers-to-be.

"We're at the point now where programs and anti-discrimination laws are alleviating the pink-collar ghetto," Starkey says.

Sheerin, mother of a 9-month-old, has been able to take advantage of Nynex's Gradual Return to Work Program. It enables her to work part time at the same pay rate, with full benefits and holidays. Still, adjustments have had to be made. Because she works only three days per week, Sheerin and her manager decided it wasn't feasible for her to resume her managerial job. "I am missing opportunities because I'm not back full time, but I'm still able to decide whether or not to return full time to my prior IS manager slot," Sheerin says.

And perceptions and prejudices linger — often unseen and unspoken but nonetheless felt. Are women just being paranoid? Not likely.

Among the letters I received after my previous column was a missive from a male executive at a West Coast software firm who described himself as a "card-carrying feminist male." But he wrote, "Given the choice of investing in a) a male who will probably be around and completely attentive for the next five years, or b) a female who is known to be interested in taking time out to have a family and may well come back only part time and certainly not overtime, which would you choose?"

Attitudes such as those have left women cringing and overcompensating. Better to be thought of as an uncomplaining Superwoman than to raise the specter of needing special treatment to juggle dual roles as IS professional and full-time mom. ■

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**This week on  
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# RAID's Many Flavors Give IT Managers Many Options

*Emerging Trends in Open Systems Storage*



As Featured in **COMPUTERWORLD**



# The NCR Scalable Data Warehouse.

**NCR unveils record-setting computer using Teradata**

At the announcement in Tokyo, NCR demonstrated the world capabilities. NCR used 50 workstations.

## NCR debuts mammoth 11 terabyte data warehouse

### EMC, NCR to Demonstrate Largest Data Warehouse

By a WALL STREET JOURNAL Staff Reporter  
HOPKINTON, Mass. — EMC Corp. and NCR Corp. tomorrow will unveil what is believed to be the world's largest data warehouse, containing 11 terabytes, or 11 trillion bytes, of information.

The product, which will be showcased in Tokyo, combines EMC's open-system computer-storage product, the Symmetrix 3500, with a powerful new server developed by NCR, a unit of

age-system maker recently shifted its sales strategy to include more OEM agreements.

The 10 high-end storage units EMC sold to NCR are valued at over \$14 million, the companies said. In the demonstration, Dayton, Ohio-based NCR has connected 50 workstations to the database, generating a volume of transactions equivalent to 3,000 users querying the data warehouse, the

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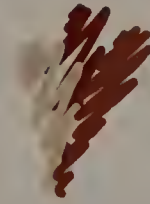


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## *Introduction*



# Around-the-Clock Need for Storage Access Creates Day of Demand for RAID

Storage has become a critical component in the IT infrastructure. Users are clamoring for access to storage, consistent performance and storage management capabilities — and they want them around the clock. How can you be sure that the mission-critical data on your LANs will be there when your users need it? How will you provide the fault tolerance and high availability users have come to expect from mainframe-based systems without compromising your cost structure?

Many IT managers are convinced that the answer to these questions is RAID (Redundant Array of Independent/Inexpensive Disks) technology. Use of RAID is increasing in all classes of network systems and servers.

How fast is the market for RAID products growing? Just 24 months ago, RAID-configured subsystems comprised over 45% of all multiuser storage shipments. Today the figure is 80%. RAID has become a mainstay technology for ensuring continuous data access.

RAID vendors are maximizing their prod-

ucts' throughput by investing in disk array controllers. But IT managers' options for RAID are not limited to high-capacity disk farms and expensive controllers. They can also increase reliability and performance through server-based software. Host-based software arrays, which create a virtual disk environment with existing LAN storage devices, offer excellent administration and configuration flexibility.

Successful deployment of RAID requires understanding its benefits, its advantages and disadvantages, and how to determine the "sweet spots" and price/performance of products in this area. As vendors move to open systems solutions, the cost of ownership for their disk arrays is dropping. In addition, new features such as hot-swap capabilities and hot-sparing are making RAID-based disk arrays even more attractive for high-availability applications.

This White Paper will take a look at some of the trends, products, distribution strategies and technology requirements for RAID in the open systems marketplace.

This White Paper was written by Thomas Lahive, Senior Storage Analyst at International Data Corp. The goals of the White Paper are: to define trends in the storage marketplace; to describe different storage product offerings and feature sets; to outline pricing considerations; to outline the product lines of leading vendors; and to educate the readers about the impact of critical components on performance. For more information about the topics addressed in this paper, readers can contact Lahive at 508-935-4499, (fax) 508-935-4339 or [tlahive@idcresearch.com](mailto:tlahive@idcresearch.com). Also contributing to this report was Robert Gray, Research Manager for Storage Subsystems at IDC. IDC is the IT industry's leading provider of market research and consulting services.



# Implementing RAID

## *What IT Managers Need to Know*

**T**he loss of stored data can put a corporation out of business. Is it any wonder that storage has become a critical component in the IT infrastructure?

Storage has historically represented 20% to 30% of what a company would pay for a system. But today, storage often accounts for as much as 35% of the cost of the server value.

The reason for this increase is simple: Companies need more storage than ever. Today's storage configurations routinely entail many hundreds of gigabytes, and even as the price of a megabyte drops, it is common for these configurations to cost more than \$200,000. In fact, this year alone companies will spend more than \$25 billion on multiuser storage products.

The fear of losing critical data has driven many corporations to invest heavily in disk arrays, which offer a high degree of fault tolerance through re-

dundant components and the use of RAID technology. Since being developed at the University of California, Berkeley in 1987, RAID technology has been applied to storage systems to improve system performance and reliability.

The most critical mechanical components inside a server — the disk drives, the fans and the other I/O devices — often break (like most things that move).

### What's in a RAID level

Understanding and deciding which RAID level to operate can be as difficult as designing RAID subsystems. Some vendors recommend mirroring; others suggest RAID-5 (spreading the parity). Each subsystem controller has its own tricks that optimize performance for the particular disk array. As a result, some products work well when mirrored and others offer very little performance hindrances when reading or writing parity data as in RAID 3 or 5. Another group of vendors has developed unique RAID levels to alleviate I/O bottleneck associated with parity data. Though no size fits all, the chart below will help you decide which RAID level to implement.

FIGURE 1

### Pros and Cons of the Flavors of RAID

| Level                      | Description   | Advantages  | Disadvantages  |
|----------------------------|---|---|--|
| RAID 0                     | Data is striped equally across all other drives and does not write parity information.  | No performance or capacity losses, as it appears to host as one logical device.   | Offers no level of availability — a lost drive means loss of data. No protection is built into RAID 0.                         |
| RAID 1 —<br>Disk Mirroring | Duplicates data from one drive to another. If at any time a drive fails, an exact copy can be reconstructed.  | Provides a high degree of data availability, since the likelihood of both drives failing is highly improbable.  | Expensive — half of the subsystem capacity is unusable.  |
| RAID 3                     | Data is distributed across all the drives so missing data can be mathematically reconstructed from remaining drives in the array. Data is striped across array; and logical records are made and written to a separate drive that contains this parity information. | Less overhead associated with parity than mirroring. Works well with large block sizes and large request sizes. Offers excellent read and write performance.                        | Peer performance in OLTP environments due to high number of I/O requests. Small request sizes will waste disk space.           |
| RAID 5                     | Reads and writes separate disks independently so that parity is spread across all drives.   | Capacity overhead is less than mirroring. Suitable for high I/O rates at short block sizes. Offers overall excellent performance at read-intensive operations in OLTP environments. | Update performance is degraded. Referred to "RAID 5 Write Penalty" whereby four operations are conducted during a write cycle. |

Source: International Data Corp.



Since the first line of defense against data loss is to protect against disk drive failures, companies are spending more of their storage budget on RAID configurations than JBOD (Just a Bunch Of Drives) configurations, which consist of "dumb" or "limited intelligence" storage drives that offer no data protection at all.

RAID technology is "smart" because it generates extra bits of data from existing data, allowing the system to create a "reconstruction map" so that if a hard drive fails, it can rebuild lost data.

RAID can be implemented in different ways. In the simplest form, RAID subsystems duplicate the data on drives. This process, called mirroring, provides an exact copy that protects users fully in the event of data loss. But mirroring has a downside: cost. If full copies are always to be kept current, users need to double the amount of storage capacity that is kept on-line.

Other RAID methods are less expensive because they only partly duplicate the data. This allows storage managers to minimize the amount of extra disk space (or overhead) they must purchase in order to protect data.

Although RAID does not 100% guarantee that you will always have access to your data, a properly configured subsystem is the best way to limit costly downtime.

#### Fault tolerance extended

As RAID has evolved, storage subsystems vendors have extended the concept of fault tolerance beyond just the rotating disks inside a drive. They have increased the overall level of redundancy in their products by adding a level of fault tolerance across all of the critical components inside the subsystem: the controller, fans, power supplies and other potential points of failure.

IDC divides the storage subsystem market (which consists of both RAID and JBOD) into internal and external units. In internal subsystems, disk drives are embedded inside the system cabinet or rack and often share the same power supply, fans and I/O logic as the host CPU. In external subsystems, drives reside in an enclosure which is external to the system cabinet and which has its own power supply,

fans and, often, controllers. The storage subsystem is attached via a SCSI interface or other form of cable to the host CPU.

Internal storage is typically less expensive than external storage. Users of external storage units pay for additional packaging, but gain benefits such as higher performance controller boards, increased expandability, another level of fault tolerance, modularity and support for several host CPUs.

Most external configurations are sold by third-party vendors — suppliers that manufacture the storage subsystem but not the host system. For buyers, this means that they have options for external storage beyond their systems salesperson.

#### Centralized storage

In the open systems marketplace, 60% of all storage revenues are generated by external disk arrays. IDC expects this percentage to grow to more than 70% by the year 2000. The main reason for the rising popularity of external storage is that it allows users to attach multiple host systems to one storage subsystem. This process of centralizing storage is becoming increasingly popular with IT managers — particularly those at sites with several different servers — because it simplifies storage management. One storage device can connect to all the different servers, and being able to support all the different storage requirements of servers connected by multiple operating systems is a very attractive proposition for an IT manager, as is significantly reducing lifetime management costs.

There are two main reasons for the trend toward centralized storage. Reason #1: The total cost of centralizing is less than that of distributed, in which the cost to manage exceeds the cost of purchase. In other words, although the purchase price of a storage solution may amount to less than \$1/MB, the cost of managing it may be 20 times as much. Users should make sure that their initial storage product line lets them manage storage easily. Reason #2: The performance of centralized storage will exceed desktop client storage, because the network disk in centralized storage servers can perform two to four times faster than a single logical disk inside a PC.





The number of sites with multiple servers running multiple operating systems is increasing. In a recent IDC survey, 71% of sites had multiple midrange servers and 60% of them had a combined midrange server, LAN server and mainframe. Over 90% of the sites plan on migrating key applications to a midrange or LAN-based server.

FIGURE 2

## Worldwide Disk Storage OS Revenue, 1996-2000

|                           | 1996     | 2000     | CAGR '96-'00 |
|---------------------------|----------|----------|--------------|
| S/370/ 390 .....          | 4,355    | 3,850    | -3.0%        |
| Unix Multiuser .....      | 6,619    | 10,989   | 13.5%        |
| OS/400 .....              | 1,619    | 1,585    | -0.5%        |
| Open VMS .....            | 578      | 525      | -2.4%        |
| Other OS .....            | 6,022    | 5,314    | -3.1%        |
| NOS Server .....          | 4,362    | 8,337    | 17.6%        |
| Windows NT Server .....   | 1,583    | 4,681    | 31.1%        |
| Total Multiuser Rev ..... | \$25,139 | \$35,281 | 8.8%         |
| % Growth .....            | 10.7%    | 7.7%     |              |

Source: International Data Corp.

The reason why this is happening is that applications being written for open systems environments now offer the same levels of availability and reliability as those written for proprietary environments, more applications are being written for open systems environments. It used to be that IT managers were not satisfied unless all of their treasured data resided on the mainframe. Now that that information resides in Unix environments, safe storage is critical to the peace of mind of today's IT managers. Vendors of systems and of storage solutions realize that to support this transition, they must offer solutions such as subsystems that support several operating systems.

Systems vendors have historically controlled over 95% of storage expenditures worldwide. There were many reasons for their dominance, including pricing, packaging, support and distribution (it was easy to purchase storage by writing another check to the salesperson who had come to install your system) . . . and they guaranteed that their storage products were compatible with the host system or server.

But as users began to demand features such as multi-host OS support, higher performance and increased reliability from their disk arrays (and lower prices and better support from their suppliers), sys-

tems providers began to lose market share. Today, systems providers are hamstrung in their ability to increase storage revenues by conflicting business objectives. While users are demanding multi-host support, a systems vendor must optimize its storage products for its own captive base.

As a result, even though all storage vendors enjoyed significant growth in 1995-96, third-party providers grew faster than systems providers (Table 3), because they were more able to support multiple host operating systems. But operating systems support is only one way in which vendors differentiate their external disk arrays. Other factors include level of fault tolerance, capacity and cache support. Table 4 compares external disk arrays and describes product strengths or uniquenesses.

The storage arena is particularly prone to in-breeding; vendors in this marketplace commonly purchase products from competitors and resell them. As a result, IT managers will often be looking at a RAID array that has many different vendors' products inside. IT managers should not be reluctant to purchase such a product. IT managers facing a purchasing decision must consider the completely packaged product and what level of service they will

FIGURE 3

## Worldwide Disk Storage OS TBytes, 1996-2000

|                              | 1996     | 2000      | CAGR '96-'00 |
|------------------------------|----------|-----------|--------------|
| S/370/ 390 .....             | 4,051    | 23,333    | 54.9%        |
| Unix Multiuser .....         | 11,819   | 156,986   | 90.9%        |
| OS/400 .....                 | 2,424    | 17,809    | 64.6%        |
| Open VMS .....               | 918      | 6,944     | 65.8%        |
| Other OS .....               | 7,085    | 54,363    | 66.4%        |
| NOS Server .....             | 14,541   | 213,223   | 95.7%        |
| Windows NT Server .....      | 3,166    | 95,775    | 134.5%       |
| Total Multiuser TBytes ..... | \$44,004 | \$568,433 | 89.6%        |
| % Growth .....               | 108.5%   | 56.2%     |              |

Source: International Data Corp.

receive from the ultimate supplier. It is generally both cost- and performance-effective to buy a product that offers best-of-breed componentry.

There are three critical components in a subsystem: disk drive, controller and packaging (which comprises power and cooling). The primary suppliers of drives — Seagate, IBM, Quantum, Western



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Digital, Fujitsu, Hitachi and Micropolis — all offer either Fast/Wide SCSI 3.5- or 5.25-inch form factor. Although these drives are SCSI-based, almost every system vendor and third-party provider customizes and configures the storage environment for a specific drive maker. For example, Seagate, the leader in market share among suppliers of high-capacity (greater than 1GB) drives embeds XOR technology onto 5.25-inch drives specifically for EMC.

Some RAID and SCSI controller boards are designed by independent suppliers such as Mylex, DPT, CMD, American Megatrends and Adaptec. They in turn supply systems and third-party vendors (Adaptec, for instance, supplies Compaq). It doesn't matter who the manufacturer is; most implementations are customized for that vendor. Designing one's own controller board is not un-

common but is very costly and may take several years. To justify that type of investment, a \$50 million product line is usually required.

Although many of the individual components are



When users put critical data on home-grown storage subsystems, it is a nightmare. SCSI technology is supposed to be plug-and-play, but there are many hindrances to making it work.

commercially available, IDC does not recommend that users piece together their own subsystem. When users put critical data on home-grown storage sub-

FIGURE 4

### Leading Open Systems External Disk Array Quick Product Specifications

| Manufacturer/Product                           | RAID Level       | Capacity (GB) per Cabinet | Cache (MB) | Product Strength/Uniqueness   |
|--|------------------|---------------------------|------------|---|
| Amdahl/LVS 4500                                | 0, 1, 3, 5       | 21 to 386                 | 1,280      | Network managed multi-host storage delivering 24/7 performance and data availability, non-disruptive, upgradable; scalability, capacity, cache, data paths and bandwidth.   |
| Andataco/Enterprise Storage Packaging          | 0, 1, 3, 5       | 32 to 392                 | 640        | Designed as a cableless system utilizing Ultra-SCSI architecture offering high availability. A local, Intranet, and Internet storage management and configuration software utility is bundled.  |
| Boxhill/5300                                   | 0, 1, 4, 5, 0/1  | 4 to 504                  | 256        | Above average scalability, complete system redundancy, attractive pricing and corporate HQ is in NYC, giving it Wall Street market niche.   |
| Data General/CLARiON 2000                      | 0, 1, 3, 5, 1/0  | 2.5 to 336                | 128        | Highly fault-resilient mainstream storage product. Extremely tight microcode, minimal overhead RAID engine.   |
| Digital/410                                    | 0, 1, 3, 5       | 12.6 to 168               | 32         | Modular, available through multiple channels, worldwide service and support, and can be upgraded quickly by end user.   |
| EMC/3500                                       | 0, 1, S          | 69 to 1,118               | 4,096      | High scalability, supports most operating systems, extensive service and maintenance, and complete redundancy.  |
| Hitachi Data Systems/5750                      | 0, 1, 5          | 4.0 to 83                 | 256        | High fault tolerance even at low capacity points.   |
| HP/XLR1200                                     | Adaptive 0, 1, 5 | 24 to 240                 | 72         | Log-structured file system in conjunction with dynamic data redundancy (mirroring to RAID 5) management at a low \$/MB.   |
| IBM/7133                                       | 0, 1             | 16 to 432                 | N/A        | Next generation serial architecture, SSA design, offering performance at 3,000 I/Os and 80MB/sec loop bandwidth. Low \$/MB.   |
| IPL/ESS  | 0, 1, 5          | 32 to 256                 | 4,000      | Software allows system to download data automatically from desk-side server to glass house and offers integrated back-up and recovery solution.   |
| MTI/9300                                       | 0, 1, 0+1, 5     | 8 to 584                  | 256        | Network cross-platform managed storage, redundant controllers, dual host connections, write-gathering cache, data consistency check, and scalable components.   |
| NCR/6271                                       | 0, 1, Other      | 139                       | 2,016      | Marketed as an entry-level (scalable to TB+ capacities) disk array to the enterprise subsystem market, customers can maximize availability through the utilization of fully redundant componentry and full backup with a remote data facility option. |
| Storage Computer/RAID 7 - Storage Super Server | 1, 3, 5, 7       | 136 to 1,123              | 1,096      | High-performance, network manageable (SNMP), shared storage services for all SCSI hosts, with concurrent multi-host, high-speed (40MB/sec, 100MB/sec) external connectivity; fault-tolerant, multi-level mirroring; 3-year warranty.                  |
| Storage Dimensions/Superflex 5000 Series       | 0, 1, 5, 0/1     | 4 to 140                  | 32         | Cross-platform, host independent with innovative backplane design offering interchangeable I/O modules. Dual redundant controllers with active/passive capability.  |
| Sun/SPARCArray 200                             | 0, 1, 5          | 7 to 324                  | 4          | Low-cost solution offering high capacity and long reliability.  |
| Symbios Logic/Series 3 FS60                    | 0, 1, 3, 5       | 60 to 240                 | 768        | Very competitive RAID price/performance with a growth path to new I/O technologies. Fully fault tolerant storage system with gold-level RAB certification.  |

Source: International Data Corp.



## How Does Your Storage Purchasing Strategy Match Up?

Are your storage purchasing strategies in the "norm"? IDC recently surveyed nearly 1,000 midrange sites. Here are some samples of their storage purchasing behavior.

On average, the prices of hard disk drive decline 3% per month. This motivates users to buy storage as needed, which means that multiple disk drives at multiple instances are added continuously (weekly to monthly) as opposed to in large blocks at cyclical periods. On average, 70GB per site will be added in 1996, which represents a doubling of storage.

Application performance varies with different RAID levels. The more relevant an application is to a business environment, the higher the rate of RAID usage. But even in the mission-critical applications, only half the storage is protected.

With the price of RAID dropping, IT managers should add storage in order to get 100% protection for mission-critical applications. However, RAID does not offer 100% disaster tolerance and does not replace regular backup.

*How users ranked their applications in order of RAID usage:*

1. Back-office, OLTP applications
2. Front-office, OLTP mission-critical
3. Operating system
4. Systems management
5. Office Productivity
6. Development Tools
7. Non-mission critical applications (only 32% capacity protected)

Vertical markets buy and use storage differently. The transportation and communications industries have the highest average capacities, typified by the database applications at these sites. (Databases occupy 60% of capacity at midrange sites.)

Although the second largest industry, finance, also has large databases, the mean capacity for these systems is less than other industries. Manufacturing, refining and agriculture have the least capacity, reflecting lower levels of IT investment. Average capacity by vertical industry:

*Communications and Transportation:* 92.2GB, with 10.6% having more than 250GB

*Finance:* 74.6GB, with 5.8% having more than 250GB

*M/R/A:* less than 1% have greater than 250GB

Plans for consolidating storage also vary by industry. Healthcare, retail and communications have more aggressive consolidation plans than banking. This is not surprising; the finance industry's disaster recovery requirements limit its ability to consolidate. However, consolidating to multiple sites offers another level of consolidation and availability.

Of midrange sites, 33.4% already have centralized storage or will do so within 12 months; the rest either do not yet have plans to centralize storage or are against the idea.

When IDC polled users about consolidation in terms of capacity, it de-

termined that 49.7% have centralized storage or will consolidate in the next 12 months; the rest either have no plans to consolidate or have decided against it.

**Storage is purchased through multiple channels.** Private sectors, especially banking, tend to buy direct from the manufacturer in order to obtain the common source benefits. Government agencies, which typically must initiate RFQs, purchase by lowest bid. Healthcare, non-banking and public/government are likely to purchase storage from third-party providers. Manufacturing, banking and transportation prefer the systems brand.

*Storage is purchased:*

Direct from a systems manufacturer, 53.8% of the time

Through a reseller from a systems manufacturer, 29.8% of the time

Direct from a third-party supplier, 10.9% of the time

Through a reseller of a third-party supplier, 5.5% of the time

**Open systems environments are the highest growth operating systems.** Open VMS, AS/400 and Other OS sites are not adding as much storage as open systems environments, which are generally considered to be legacy systems with fewer new applications required of them. Of the entire midrange install base, storage revenue OS is distributed as follows;

46% Unix

27% AS/400

10% VMS

7% Other OS



systems, it is a nightmare. SCSI technology is supposed to be plug-and-play, but there are many hindrances to making it work. Also, designing one's own subsystem is difficult, for reasons that include: system compatibility, from the controller board to the host CPU; verifying recover under all failure modes; optimizing the cache for specific block sizes and I/O request rates; integrating a storage management utility; and designing the proper redundancy, cooling and power.

When all is said and done, a user can easily spend \$25,000 for a disk array that can support 10 drives. Though at \$0.58/MB, this sounds affordable, there are many competitively priced third-party solutions that offer more redundancy and more support.

FIGURE 5

### External Open Systems Suppliers by Revenue (in millions of dollars)

|                     | 1995  | 1996  |
|---------------------|-------|-------|
| EMC*                | \$230 | \$815 |
| Hewlett Packard     | 479   | 721   |
| Digital Equipment   | 427   | 620   |
| Sun Microsystems    | 370   | 596   |
| Compaq              | 315   | 590   |
| Data General*       | 246   | 430   |
| AT&T/NCR            | 334   | 342   |
| IBM                 | 303   | 308   |
| Siemens Nixdorf*    | 255   | 284   |
| Symbios Logic*      | 106   | 149   |
| Silicon Graphics    | 90    | 139   |
| Intergraph          | 76    | 106   |
| Unisys              | 89    | 99    |
| Boxhill*            | 75    | 92    |
| Groupe Bull         | 70    | 73    |
| MTI*                | 35    | 69    |
| Andataco*           | 65    | 68    |
| Storage Dimensions* | 57    | 66    |
| ICL                 | 61    | 63    |
| Sequent             | 36    | 58    |
| AST                 | 42    | 49    |
| Olivetti            | 63    | 49    |
| Tandem              | 43    | 45    |
| StreamLogic*        | 28    | 30    |
| Dell                | 17    | 28    |
| Cambex*             | 22    | 28    |
| Maximum Strategies* | 20    | 27    |
| Storage Computer*   | 19    | 26    |
| HDS                 | 5     | 25    |
| Baydel*             | 19    | 24    |
| NStor               | 18    | 24    |
| IPL*                | 12    | 23    |
| Storage Technology* | 17    | 22    |
| CMD*                | 20    | 21    |

\*denotes third-party supplier

Source: International Data Corp.

IDC believes that terabyte growth will more than double every year for the next five years. Most of this growth will come from open systems operating systems such as Unix, NetWare and NT. Proprietary markets (i.e., MVS, VMS and AS/400 environments) do not offer the same growth rates.

Drive capacity doubles every 18 months, while the average price per spindle remains constant. For instance, two years ago, \$1,200 bought a 1GB 3.5-inch drive; today that same money will purchase a 4GB 3.5-inch drive. Although standalone drive prices are less than \$0.30/MB, users are paying \$0.50 to \$2.20/MB for a packaged open systems subsystem. The extra cost per megabyte is due to five factors:

- 1) RAID controllers, which cost \$1,400 to \$15,000
- 2) memory or cache (\$35 to \$110 per MB)
- 3) packaging, cooling and power (up to \$20,000)
- 4) software (can be bundled with the subsystem or can cost \$50,000 for remote copying utilities)
- 5) service and support (often priced with capacity)

However, each of these items can be negotiated for at the time of purchase.

Disk arrays do more than support the I/O of a host CPU; depending on the application, they can affect overall system performance positively or negatively. Users should be cognizant of the application the subsystem will support. They may not need certain cache configurations, specific capacity requirements or multi-host operating system support.

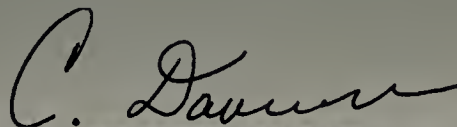
### Conclusion

Before making a purchase decision, users should know how to determine a product's "sweet spot" — a combination of capacity, operating systems support, availability and price. They should do more than just review product literature; performance and host server compatibility cannot be measured by looking at a spec sheet. Each subsystem was designed for a specific operating system or a specific business application.

Users should try to negotiate how much they pay for a megabyte, and should also consider limitations in application performance and support. If not, the initial investment will only be a fraction of the storage cost, with additional money required to make the IT environment reach optimal performance. Put another way, depending on your driving conditions, your mileage may vary. ■



# Fault Tolerant Decision

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## Power behind the thrones

*Two managers of top IS shops find their administrative assistants are indispensable parts of their organizations*

By Leslie Goff

**W**hat do some top information systems managers know about the importance of administrative assistants? Take a look at two of last year's *Computerworld* Premiere 100 IS organizations.

To the outside world, the assistants are the voices at the other end of the telephone, the guardians of their bosses' time and availability — all-seeing, all-knowing sentries. To their bosses, they are indispensable — less administrative or assistant and more executive partner.

"We both have the same goal," Laura Kaff says of her work relationship with Andrea Stanley-Miller, director of computer services at AES Corp., a company whose IS organization was ranked No. 2 by *Computerworld* last year.

"We want everyone at AES to use E-mail. We are not centralized, and communication is key for us," Kaff says.

To that end, Kaff has frequently taken matters into her own hands. Before AES had global electronic mail, she opened a CompuServe account. And when working on the annual report, she supplied the printer with AES' E-mail software.

Before the company implemented a global E-mail system, each of AES' international offices faxed monthly handwritten check registers to the accounting department. Kaff took the initiative to set up a messaging service for each office. For instance, she set up a CompuServe account for the Brazil office and a direct-dial-in system for the Puerto Rico office. Now every office has First Class, a cross-platform E-mail system from SoftArc, Inc., and uploads check registers automatically to a Lotus Development Corp. spreadsheet.

"When there's a job to be done that can be done electronically, she insists on it, and that's helpful in promoting what I want to promote," Stanley-Miller says. "I would not be nearly as effective with an [administrative assistant] who didn't take an interest in systems."

Kaff joined AES two years ago after six years in banking, experience that earned her a dual role as IS liaison to AES' accounting department. Her education and skills seem to coalesce in the IS environment.

"It's funny. I don't think anyone ever says, 'I want to be an administrative assistant,'" she muses. "In banking, I was a branch manager. This actually pays more, but people think an administrative assistant is just a secretary, that you handle the boss' business and you type. It's not that way anymore. I'm her backup when she's not here."

Rosie Sosa has worked for Jim Bussey, vice president of IS at Carnival Cruise Lines (ranked No. 5 last year by *Computerworld*), for 10 years. In that time, they've struck a give-and-take relationship that she says makes the office feel more like an extended family than work.

"Our personalities work well with each other," Sosa says. "We each understand what the other needs and how to respond. We're both very family-oriented, and he puts himself in my place with regard to my kids. And I know what he needs done to free him to devote his attention to the important things."

When her son has the day off from school, he joins her at work and makes Bussey's office his playground while Sosa conducts business.

Bussey says that when Sosa is on vacation, he feels a loss — professionally and emotionally. "Others can step in and do the mechanics of what she does, but the ability to think together and act like a unit is missing when she's not around. We respect each other's needs."

They also share a familial sense of humor. "When I first came to work here, I used to call him 'Mr. Bossey' instead of 'Mr. Bussey,'" Sosa says. "And when I was pregnant, I used to catch him doing the penguin walk behind me."

"A lot of people go to work and all they think about all day is leaving," she adds. "Not me; I feel like this is an extension of my family."

Goff is a freelance writer in New York.

(www.computerworld.com) AUGUST 19, 1996 COMPUTERWORLD

## Beyond brochure-ware

Computer Sciences Corp. (CSC) in El Segundo, Calif., ended its recent CSC Exchange in Boston with a razzle-dazzle display of great commercial World Wide Web sites. Following are four freebie sites that impressed even this jaded editor. They go way beyond online brochures to provide enticing, useful and interactive information. — *Allan E. Alter*

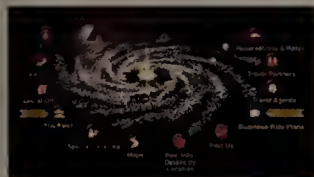
### www.edmunds.com The Web site for smart shoppers



Edmund's Automotive Buyer's Guides is the bible for anyone who wants to know the actual dealer's cost of a car before the haggling begins.

Edmund Publications Corp. has put this information online, along with car reviews, specifications and news about dealer incentives. But this free site does *Consumer Reports* one better: It hot-links you to Auto-by-Tel, a free service that will help you find the lowest-price dealer near you.

### www.avis.com The global Web site



Richard J. Schroth and Tim Andrew, the former CSC consultants who selected these sites, say Avis, Inc.'s is a great example of how to serve an international audience.

It's full of information on Avis car rental sites in every country; included are insurance and rental requirements, special services and advice on car models around the world. Did you know Avis offers free winter tires in Minsk?

### www.firefly.com Building an online community



This site isn't just an intelligent agent; it's also a matchmaker. Tell Firefly about your musical and movie tastes and it will update you on new albums and movies that will float your boat. Firefly will also pass along the electronic-mail addresses of fellow Firefly members who share your interests. We hear lots of blather about creating an online community on the Web, but this site, run by Agents, Inc. in Cambridge, Mass., actually does it.

### www.amazon.com The spread-the-word site



You can shop and browse at Amazon.com's online bookstore and read descriptions and published reviews of many of the books it offers. But what caught the eyes of

Schroth and Andrew was that visitors can write and share their own book reviews. How's that for creating word-of-mouth advertising? Authors and publishers can post comments, too. (The site is also linked to @Computerworld's Tech City.)

## Casting about for Dilbert

### Looks like some of our readers would rather watch a sitcom than a drama about a hospital emergency room

When we asked our readers who should play the lead role in *Dilbert: The Movie* [CW, July 15], no one agreed with our pick of Anthony Edwards, the bespectacled doctor on the NBC drama *ER*. Rather, most of those who logged on to our World Wide Web site chose comedian Drew Carey, star of an ABC sitcom that bears his name.

"Every time I watch [The Drew Carey Show], I think *Dilbert: The Sitcom*," one reader said.

#### Other notable picks included the following:

- Some agreed on casting Danny DeVito as Dogbert, but others said he should be The Boss. There *is* a bit of a resemblance to the latter. One reader suggested he play both roles, saying, "Hey, if Michael Keaton can do it..."
- Another suggestion was Spuds MacKenzie as Dogbert, with the voice of Jack Nicholson.
- And finally, it was suggested that *Seinfeld*'s Michael Richards (Kramer) play The Boss. Well, he has the hair.

— Rick Saia



# In Depth

## The Practical Manager's Guide to Useful

# JavaScript Snippets

An indispensable handbook for frugal  
go-getters who seek to implement modern  
intranets and Web pages

**BY MIKE CUENCA**

Java may be the future of the Internet. But until more programs and operating systems fully support Sun's programming language, most information systems organizations must wait for it to fulfill its promise.

On the other hand, JavaScript — the Java spin-off developed jointly by Sun Microsystems, Inc. and Netscape Communications Corp. (see box above) — is useful to IS right now, on corporate intranets and World Wide Web pages.

JavaScript programs, often called "snippets" in homage to Java "applets," can be practical, such as scrolling messages, warning boxes or "cookie" counters; whimsical, such as background samplers; or both — the "bozo filter," a primitive but effective security device. We searched the Internet to find the best snippets available.

The good news is that the snippets highlighted here are free for the taking. Some JavaScript programmers require you to credit them, but most allow free access as long as you don't directly profit from the use. Sounds like a pretty good deal to us.

### A JAVASCRIPT PRIMER

In December 1995, Netscape and Sun announced a partnership to produce JavaScript. While Java is a programming language, JavaScript is used by HTML page authors and developers to dynamically script the behavior of objects that run on either the client or the server.

JavaScript is placed in the HTML source file for a page and is activated in order, just as everything else in the file is activated.

For more on how JavaScript works and how to implement it, see Netscape's "JavaScript Authoring Guide" at [home.netscape.com/eng/mozilla/2.0/handbook/javascript/index.html](http://home.netscape.com/eng/mozilla/2.0/handbook/javascript/index.html).



## THE WARNING BOX

[www.tanega.com/java/java.html](http://www.tanega.com/java/java.html)

Perhaps the most useful snippets are warning boxes. There are plenty available: warnings that open before users can enter a page, warnings that open when users exit, even warnings that appear when users cover a specified element with the cursor.

Charles C. Goodin has put together a great collection of these warning and alert boxes. You can use them as they are or customize them for your site.

## THE TICKER TAPE

[www.freqgfx.com/411/library.html](http://www.freqgfx.com/411/library.html)

Some Web publishers use scrolling messages to display sports scores, stock prices or breaking news. Many, of course, use them for self-serving messages that trumpet the high value and quality of their site.

Other possible uses? How about creating a live, real-time newsletter on your intranet, complete with meeting location updates, local office tidbits and the like?

Several different ticker-tape messages written by Andy Augustine — including one that can be stopped and that contains links — are available at this site.

## FRAME NAVIGATION BUTTONS

[www.tanega.com/java/java.html](http://www.tanega.com/java/java.html)

If you're using Netscape Navigator frames on your home pages, these navigation buttons — also created by Goodin and found at the same site as his warning boxes — overcome one of Navigator's major shortcomings.

Currently, when you click on Navigator's "Back" button, you lose that entire page, rather than just going back in one frame. Goodin's navigation buttons allow you to provide back, forward and specific page jumps.

## BACKGROUND SELECTOR AND TESTER

[gmccomb.com/javascript/bg\\_select.htm](http://gmccomb.com/javascript/bg_select.htm)

If you're doing Web page design, this snippet can help you look through the available backgrounds on Netscape's home site. It also lets you try out different typeface colors against the backgrounds. The snippet was created by Gordon McComb, author of *The JavaScript Sourcebook*.

## THE BOZO FILTER

[www.infi.net/~thobbs/iffest.html](http://www.infi.net/~thobbs/iffest.html)

Named for its ability to keep clowns off your Web site, this snippet blocks access by uniform resource locators (URL) that you specify. Of course, most IS departments need a more sophisticated security program, but this snippet, created by Tim Hobbs, acts as a simple, universal filter that may be a good short-term solution.

## THE COOKIE COUNTER

[www.sna.com/mmatteo/Java/jscookies.html](http://www.sna.com/mmatteo/Java/jscookies.html)

Client-Side Persistent Information, better known as "cookies," is becoming a popular way to track visitors. A cookie is a little file that each browser that visits your site stores and keeps for a specific period of time. That cookie is then read by your server when the visitor loads your page. The cookie contains information about visitors such as their URL, their page preferences and what they've bought or requested from you before.

Cookies raise privacy concerns because of their tracking ability. But if you're running an intranet or Web page, their value is obvious.

The simplest of these snippets provides a personalized greeting and tells visitors how many times they've visited. You can store this information in a database. This type of cookie is available from Marc Matteo at the address above. For more information about cookies, including Netscape's own specifications, see [www.netscape.com/newsref/std/cookie\\_spec.html](http://www.netscape.com/newsref/std/cookie_spec.html). ■



# COMPUTERWORLD

For the IS manager on the go, we've assembled a convenient general store of JavaScript information, tips and links at our Web site: [www.computerworld.com](http://www.computerworld.com).

Cuenca is assistant professor of visual communication at the University of Kansas' William Allen White School of Journalism and Mass Communication in Lawrence.



# Computer Careers

## Meeting of the minds

*Technical prowess alone doesn't cut it in IS consulting. This is a game for both sides of the brain.*

**Y**ou have learned new technologies, worked on good programs, and your career seems to be going pretty well. But you want to learn the very latest technologies, work on new and exciting projects and consistently earn top wages in the industry. You're wondering if becoming an information systems consultant is your best next career move.

For some, IS consulting can be the ultimate skills thrill. For others, it can be a nightmare of insecurity. Success means mastering skills beyond just the technical ones.

John Poronto, a consultant at Anatex in Troy, Mich., describes the rewards, challenges and pitfalls you can expect.

**CW: What impact does consulting have on an IS career?**

**PORONTO:** Consulting firms are successful only by having highly skilled employees. They are, therefore, willing to train in the latest technologies and project management techniques.

Acquiring skills that are in high demand provides many advantages, including high salaries, excellent benefits and the ability to move into project management and technical architecture roles.

But the most important benefit is that you are in control of your career.

**CW: What is the current market for IS consultants?**

**PORONTO:** There is a shortage of highly skilled IS consultants. This is evident by the pages of want ads in the newspapers, the abundance of recruiting firms and the many career sites on the Internet.

The key is to join a firm that will guide your career path to make you valuable for the long term.

This includes training in technology [and] the ability to acquire business skills.

**CW: How do you decide if IS consulting is right for you?**

**PORONTO:** Consulting may not be for everyone. Much of the demand in the industry is due to the lack of consultants with a good understanding of business dynamics.

Also, some projects will be exciting, some won't. A consultant frequently changes clients and projects and many times doesn't have an office or a desk to call [his] own.

Many times travel will be involved. This means you must be comfortable with lots of physical change.

ticeable qualities are the positive attitude they have and the enthusiasm they have for challenging assignments.

**CW: What skills are critical?**

**PORONTO:** A combination of technical and soft skills [or people skills]. You have to understand the principles of good systems development — not being restricted to one tool — and be able to consult your client in choosing the best tools for their needs. Equally important is having client/server and relational database theory knowledge.

many major cities in all the top development and database environments. The key is to understand that you will have to invest your own time.

**CW: Why do some IS consultants fail?**

**PORONTO:** As a consultant, you will interact with your client, users, and other developers on a daily basis. How effectively you develop your soft skills will become key in your success or failure. I have been involved in hiring decisions where one applicant was chosen over another because of the confidence we had in presenting this person to a client.

**CW: How can you prepare for a career in IS consulting?**

**PORONTO:** Start by understanding the object-oriented programming environment. This is the hottest spot in the industry, and you must be able to consult your client on the benefits of object-oriented development. By learning individual methods of object-oriented programming such as the Booch Method or OMT, [you can gain] a solid understanding of abstraction, encapsulation, inheritance and reusability as well as individual techniques in employing [object-oriented programming] in systems development. Also, becoming proficient in a [graphical user interface] development tool or relational database will open the doors to many of the top consulting firms. Much of the business and soft skills will be acquired as you work with different clients in different industries.

**CW: What makes it worth the risks and hassles?**

**PORONTO:** Almost daily, new technologies are emerging and enabling businesses to succeed at higher levels. Consulting [lets you] meet and work with many different people and help them make an impact on the way their business competes in the marketplace. There is nothing more rewarding than a satisfied client. ■



ERIC YANG

**CW: What qualities do successful IS consultants have in common?**

**PORONTO:** Many of the consultants I have worked with [can] switch to different application development environments or databases easily because of the solid foundation they have built through their careers. Because they understand the principles of good systems development, they easily pick up the skills of a new tool and are quickly proficient. Other no-

**CW: How does a consultant keep up with changing technologies?**

**PORONTO:** Training should be provided for you through your consulting firm. Many of the most successful consultants take much of the responsibility for [keeping] their own skills current. There are many books on all types of new technologies that are constantly being updated. User groups are available in

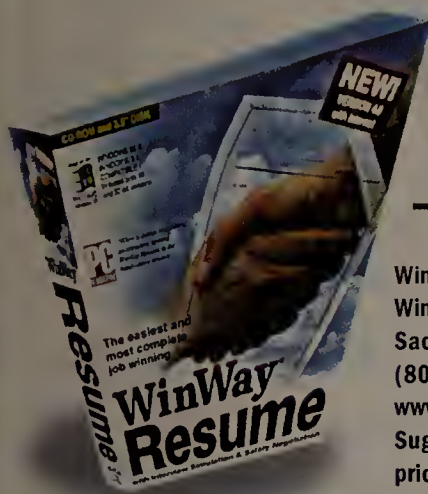












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## Resume program a one-box solution – sort of

By Jeffrey Gordon Angus

If your department is about to be outsourced or downsized, you have an urgent need to update your resume and polish your job-hunting and interview skills. If your job isn't in danger, it still wouldn't hurt to have a fresh resume. But almost nobody likes doing any of that.

Now that free enterprise has been replaced with the cult of "The Free Market" (let's be honest and call it strip-mining), few jobs are safe bets for riding into the pension years.

So, you have good reason to look at WinWay Corp.'s WinWay Resume. The CD-ROM-based Windows 3.1 and Windows 95 program is a tool set designed to guide you through the process

of creating or updating a resume.

The program isn't uniformly useful, but the overall value is very high.

An automated letter-writing module assembles a cover letter for you based on the kind of job for which you're applying. The computer area has only about two dozen jobs, but the popular data processing manager and programmer/analyst are two of them.

A specialized word processor builds resumes one section at a time. It comes with sample resumes for each job type and format templates for each section, none of which are so extraordinary that they don't go well together.

This forms-based resume processor guarantees uniform formatting and ensures that you respond in each section. Online help guides the process.

The interview simulation module is mostly very good, especially if you haven't had a lot of recent experience interviewing with human relations types. It asks the typical questions and provides direct ways to answer them.

This package allows you to produce a standard, acceptable resume and offer a standard, acceptable interview. But it can't guarantee you a great resume or a great interview. ■

Angus is a freelance writer and consultant at The Data Works in Seattle.

# Conference calendar

## TRAINING

### 1996 COMPUTER TRAINING AND SUPPORT CONFERENCE AND EXPOSITION

Sept. 8-11

Opryland Hotel,  
Nashville

Sponsored by  
Softbank Institute

For computer trainers and support professionals. Conference sessions focus on training techniques and how to use the Internet for training and support. The expo will present the latest training, support and documentation products and services on the market.

Cost: \$995

Contact: Softbank Institute,  
Medford, Mass.

(800) 348-7246

World Wide Web address:  
www.sbexpos.com

### CREATIVE TRAINING TECHNIQUES CONFERENCE '96

Sept. 29-Oct. 4

Minneapolis

Deals with general training issues, but information systems trainers can benefit from the advice on training techniques and strategies, technology and multimedia resources, team-building, facilitation and communications skills.

Cost: \$825 regular registration; pre- and postconference sessions cost extra

Contact: Creative Training  
Techniques International,  
Inc., Minneapolis, Minn.  
(800) 383-9210

## EDUCATION

### CORPORATE UNIVERSITIES ENTER THE 21st CENTURY

Sept. 9-10

Motorola University,  
Schaumburg, Ill.

Focus is on best-demonstrated practices in building partnerships with universities, creating the virtual corporation and using telecommunications to deliver learning.

Cost: \$1,195

Contact: Quality Dynamics,

Inc., New York, N.Y.

(212) 626-6693

E-mail address:

Alemcorpu@aol.com

## SUPPORT SERVICES

### DB/EXPO '96

Dec. 2-6

Jacob K. Javits  
Convention Center,  
New York

Focus is on databases, client/server, data warehousing and networking. This is a good conference for IS professionals with the above-mentioned skills to investigate career opportunities.

Contact: Blenheim NDN,  
Mountain View, Calif.

(800) 232-3976

E-mail address:

DBEXPONY@blen-usn.mhs.  
compuserve.com

## HUMAN RESOURCES

### HRMS/EXPO '96: THE NATIONAL HUMAN RESOURCES INFORMATION TECHNOLOGY EXPOSITION

## AND CONFERENCE

Sept. 11-13

Dallas Convention Center,  
Dallas

Focus is on the role of technology for human resources professionals. Not strictly an IS conference; there are plenty of career-oriented sessions on the agenda that IS recruiters and hiring managers will find valuable.

Cost: \$945 in advance, \$995 at the conference

Contact: Blenheim NDN,  
Mountain View, Calif.

(800) 232-3976

Web address: www.  
shownet.com

### NATIONAL ERGONOMICS EXPO AND CONFERENCE

Oct. 16-18

Los Angeles  
Convention Center,  
Los Angeles

Focus is on general ergonomics issues. Attendance at this conference should be required for all IS staffing managers. Computer equipment and workstations are among the leading culprits behind repetitive stress syndrome

and related ergonomic problems, and IS professionals are among the most at-risk workers. This conference can give you ideas on how to launch an ergonomics program.

Cost: \$295 in advance, \$350 at the conference

Contact: Kotch & Poliak, Inc.,  
New York, N.Y.

(212) 486-6186

Web address: webmill.  
com/ergonomics

## PROJECT MANAGEMENT

### PROJECTWORLD

Dec. 11-13

Santa Clara, Calif.

The largest conference to focus specifically on projects and project management. It offers a track targeted at IS project managers and leaders. Sessions cover a variety of technology and general topics, including team-building, working with business users and vendor partnering.

Contact: Projectworld, Inc.,  
Wellesley, Mass. (617) 431-  
9797 or (888) 943-4444

## The one-stop job shop

IS professionals can turn their next industry conference into an unbeatable job hunting opportunity.

Do you want to return home from your next trade show with more than just a satchel of product brochures? The key is to network with the right people. Try out the following networking tips from the experts:

**1. PLAN AHEAD:** If you are planning to change jobs this winter, start networking in September.

**2. PREPARE:** Do your homework before the event. Research which attending companies might be of interest, make a hit list of whom to see and come up with a few pertinent questions.

**3. MAKE CONTACTS** at roundtable discussions and lectures.

**4. TIME YOUR VISITS TO BOOTHS** when they're less likely to be busy — early in the day, at lunch or between sessions.

**5. BE DISCREET:** You want to seem interest-

ed, not desperate to leave your present job.

**6. UTILIZE YOUR FRIENDS OR PEER GROUP** for introductions to any higher-level people they might know.

**7. VISIT THE ADMINISTRATION BOOTH,** and meet organizers or chairpersons who can help with introductions. Scan any material for ideas; some booths have bulletin boards with job postings.

**8. SCHMOOZE:** Make the most of social time.

**9. FOLLOW UP:** Send letters and resumes to contacts at companies that interest you.

**10. PERSEVERE:** You never know when a networking contact will pay off. Don't expect to hit pay dirt on the very first outing. It takes some time doing all the right things to find the right job. ■

Source: Prepared by Richard M. Angus, a freelance writer, Brooklyn, N.Y.



# Regional Scope: Pittsburgh

## Made *to* Order

*In this mecca for large-scale manufacturing, changing technologies are building lots of IS job opportunities*

By Melanie Menagh

Situated at the confluence of three mighty rivers — the Allegheny, Monongahela and Ohio — Pittsburgh proved irresistible to manufacturing magnates of yore. They made this corner of western Pennsylvania their home and built factories, fortunes and superb educational, medical and cultural institutions. These institutions, in turn, have made the area a fertile environment for technology.

Although there has been a steep slide over the past 20 to 30 years in the heavy manufacturing for which Pittsburgh was famous, the presence of Fortune 100 corporate headquarters, medical centers and universities has created a seller's market for information systems professionals. We collected comments about job opportunities from area managers, including Bob Cosgrove, director of management information services at Aluminum Company of America; Gene Trudell, general manager of computer services at USX Corp.; Marty Lippert and Bill Stanley, executive vice president and vice president at Mellon Bank Corp.'s Data Processing Division, respectively; Christopher Kowalsky, chief information officer at Allegheny Integrated Health Group; Dan Weeber, chief of IS at the Internal Revenue Service's Pittsburgh office; Annette Capp, program assistant at the Pittsburgh High Technology Council; and Dave Miko, manager of computer and network operations at Bayer Corp.

**CW:** How does the Pittsburgh business scene promote IS opportunities?

**COSGROVE:** There has been a pretty solid high-tech presence in the Pittsburgh area for quite some time. The University of Pittsburgh and Carnegie Mellon University really have a lot to do with that. They've created an environment that acknowledges the value of [information technology] in applications that may be generalized or pretty specialized, like [Asynchronous Transfer Mode] technology, artificial intelligence [and] systems software.

**TRUDELL:** I guess the economy's as good now as it's been for the last four or five years. We're actively hiring.

**LIPPERT:** IS positions are on the upswing. There are a number of companies in town who, like us, are trying to get more economies through the deployment of technology.

**KOWALSKY:** Computing today is required in a lot of smaller organizations, taking us from a large

corporate, heavy manufacturing environment to client/server. Pittsburgh is requiring people to have skills that we never needed before, and right now demand exceeds supply for people who have those skills.

**CW:** What technical skills are hot?

**WEEBER:** Telecommunications skills are extremely important. The networking world in general, LAN and internetworking — that's where everybody's headed. We've done a lot of building out of our network here in Pittsburgh. In government, in particular, we're looking at Windows NT, Unix and Novell.

**CAPP:** Right now, we have job postings for Oracle, [Sun Microsystems, Inc.'s] Solaris, Unix, C++ [and] SQL — [and] for jobs like programmer/analyst, software engineer [and] services developer.

**CW:** Some managers feel that business and interpersonal skills are even more important than technical expertise. What business and soft skills are in demand?

### Salaries for IS professionals (as of fall '95)

#### NETWORK ADMINISTRATOR/ANALYST

Level I — \$34,000  
Level II — \$41,600  
Level III — \$52,200

#### PROGRAMMER/ANALYST

Level I — \$33,600  
Level II — \$56,500

#### CLIENT/SERVER APPLICATIONS DEVELOPER

Intermediate — \$38,300  
Senior — \$47,200

#### SYSTEMS PROGRAMMER

\$52,200

#### DATABASE ADMINISTRATOR

\$53,600

#### OPERATIONS MANAGER

\$59,900

Source: Fetzer-Kraus, Inc., Washington

**KOWALSKY:** This is a many-faceted, complex industry. It's easier to train someone on the technology than in the health care industry.

**STANLEY:** We're looking for people who are customer-oriented, with good written and oral communications skills. People who want to be part of a team [and have] strong problem-solving skills. We believe in the adage: "Hire attitude, train aptitude."

**CW:** What are some useful resources for job hunters in Pittsburgh?

**TRUDELL:** One of our popular venues for hiring is bringing students in as interns. We work with about 12 colleges in the area.

**MIKO:** I don't want to be interviewing umpteen people who answer an ad. I'd rather be presented with three or four prescreened people — who all could do the job — and pick the best one.

**CW:** What about resources on the Internet?

**CAPP:** [The Pittsburgh High Technology Council Web site ([techcenter.pgh.com](http://techcenter.pgh.com)) is] a fairly new service started by word of mouth. Recently, we did a direct mailing to formally notify our members. And since then, we have twice as many postings, and the number is increasing all the time. ■

Menagh is a freelance writer in New York.



The Pittsburgh skyline from West Park



**KCS**  
KCS Computer Services is a premiere system integration, training, and custom software development organization. KCS is seeking Systems and Data Architects, Analysts, Programmers, and Communications Experts in Mainframe and Client/Server environments. In addition, KCS seeks industry experts in Banking, Healthcare, Manufacturing, and technical experts in Multimedia and Microsoft. The following are typical skills required:

- UNIX/OS2/NT/NOVELL
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- VISUAL BASIC/VISUAL C++ POWERBUILDER/C++
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- COBOL/CICS/NATURAL
- IMS/DB2

KCS also has an additional office in Cleveland.

KCS Computer Services, Inc.,  
777 Penn Center Blvd., Suite  
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15235-S906

Phone (412) 823-8632  
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Human Resources Department, AD074, MELLON BANK, One Mellon Bank Center, Room 170, Pittsburgh, PA 15258-0001 or FAX: (412) 236-6685. All resumes are electronically scanned and should be formatted in Courier or Helvetica type styles. Please no color paper stock or boldfacing, underlining or graphics should be used. Visit our homepage at: <http://www.mellon.com>.



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We are Thrift Drug, Inc., an industry leading retail drug company. By offering our employees the chance to work in one of Pittsburgh's fastest growing IS Departments, we not only allow them to experience technology at it's best but we offer the opportunity to enhance careers and bring professional goals clearly into focus. The following is a list of positions and skills sets that Thrift Drug is continually staffing:

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Experience with **COBOL**, **IMS**, **DB2**, and **CICS** or any combination. Experience with **Unix** and **C** programming. Experience with **Oracle**, **SQL**, **Forms**, and **Reports**.

#### LAN/WAN AND PC SUPPORT

Experience with **MS Office**, software & hardware troubleshooting, **Windows 95**, **Windows NT**, **Novell 4.1**, and **Novell Engineer** certified.

In addition, **Thrift Drug, Inc.**, hires professionals with **Operations** experience in a large IBM environment, **Database Administrators**, **Unix** & **AS400 Administrators**, **Powerbuilder**, and **EDI Coordinators**.

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Please contact Valerie at:  
1004 McKee Road  
Oakdale, PA 15071  
Phone: (412) 787-2100  
Fax: (412) 787-9235  
[valerie@mastech.com](mailto:valerie@mastech.com)



**PNC BANK**, one of the nation's largest financial institutions, is seeking an experienced professional who can provide leadership and operational support to optimize the staff and technology resources of PNC Bank Data Center Operations to consistently meet and exceed business requirements.

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The candidate we seek will have the demonstrated ability to work with all levels of personnel to develop, recommend and implement complex technology solutions in order to satisfy long-term strategic business objectives.

Requirements include a B.S. in CS or MIS, and at least 12 years experience in progressive systems and/or operations management. An advanced degree is preferred. Demonstrated project management, staff leadership, analytical, planning, problem-solving, and communication skills are essential.

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**Technical Services  
Distributed Computing Support  
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For consideration, forward your resume to: **PNC Bank, Human Resources, Dept. P2-PTPP-11-1, 620 Liberty Avenue Pittsburgh, PA 15265. FAX: 412-762-8816.** No Phone Calls Please. For more information about PNC Bank, visit our Website at <http://pncbank.com>

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What do Oracle, Sun, Visual Basic, Java and the WEB have in common?

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## INFORMATION SYSTEMS

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Our Information Systems Department currently utilizes DEC main-frame and DEC mini systems in the support of financial applications and office automation (word processing, e-mail, time management). The clinical information system utilizes the Alltel (formerly TDS) TDS-7000 applications in support of the clinical management of patient care.

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A Pharmacy Analyst and a Nursing Analyst are required to support the ongoing implementation of the Alltel 7000 system with Primary responsibility for Pharmacy/Nursing. The successful candidates must have experience with the TDS-7000 system.

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Two positions available to become part of the financial systems team with responsibility for maintaining and supporting all financial applications for the hospital, utilizing COBOL and Cognos-Powerhouse application languages. Healthcare application experience preferred.

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This position will coordinate and support the network infrastructures of the hospital. Responsibilities include the support of the following platforms: MS Windows, Novell Netware 3.x and 4.x, TCP/IP, LAN/WAN, Novell, Microsoft, and VMS operating systems required.

We offer an excellent compensation and flexible benefits program, including health, dental, life, pension, retirement savings, generous paid time off, health and wellness programs, on-site parking. Qualified candidates should submit resumes to:

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Human Resources Department

Fax: 412-749-7184

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To explore the advances you can make with our team, forward your resume to York Health System, Human Resources, 1001 South George Street, York, PA 17405; or on-line @ <http://www.monster.com>.

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### Computerworld's 1995-96 Salary Survey is Now Available on Disk!

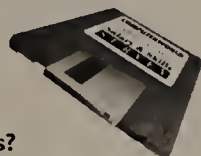
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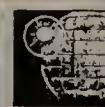


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E-mail: [marzka@serviceware.com](mailto:marzka@serviceware.com)

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**LEAD PROGRAMMER/ANALYSTS:** A minimum of 3-5 years experience is required. Excellent Project Management and communication skills are required; customer service and financial system experience a plus. Computer Science Degree preferred. Technical requirements include: Tandem Operating platform, TAL, TACL, Enscribe, Enform, Pathway, SQL and Wire Transfer/Money application experience a plus.

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For more information about PNC Bank, visit our Website at <http://pncbank.com>

**PNC BANK**



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This individual must have at least 5 years' work experience. Excellent analytical and communication skills are essential. BS degree in computer science is desirable. Working knowledge of AIX (or UNIX) and TCP/IP is mandatory. Experience with Windows NT, DOS/Windows and Novell network operating systems is preferred.

We offer excellent salary and benefit packages and the advancement potential of a large and growing organization. For immediate, confidential consideration, please send your resume with salary to: SmithKline Beecham Consumer Healthcare, Human Resources Department #IS, P.O. Box 1467, Pittsburgh, PA 15230. We are an Equal Opportunity Employer. M/F/D/V.



**SmithKline Beecham**  
Consumer Healthcare

## SHARE IN THE MCSI VISION

Management Consulting Solutions, Inc. (MCSI) a Pittsburgh based technology consulting and outsourcing company is seeking Information Systems Professionals for the following opportunities:

- **INFORMATION TECHNOLOGY CONSULTANTS**  
"Associate level" consultant positions are available. Candidates should have 2-4 years project experience in a specific vertical industry (manufacturing, retail, public sector, healthcare, etc.) and hands on exposure to emerging technologies (client server, CASE, project methodologies, etc.).
- **NETWORK PROFESSIONALS**  
Requires minimum of 5 years networking experience with a wide range of skill sets covering multiple areas such as Novell, Windows NT, Remote Access, UNIX, LAN/WAN, Internet, Email, Network Cabling and Design, Windows/Desktop, and Systems Integration.
- **MEDIPAC CONSULTANTS**  
Individuals must have minimum 3-5 years Medipac experience. Programming of Medipac and design and development of user modifications are required. Travel is a MUST.
- **SMS INVISION CONSULTANTS**  
Individuals must have a minimum 3-5 years SMS INVISION experience. Hands-on experience with screen building, pathways, and formal SMS training in COR, Patient Management and Orders are required. Travel is a MUST.

MCSI offers highly competitive salaries and benefits.



Please mail, fax or Email resume to: **MCSI**  
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INNOVATIVE PRODUCTS  
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## ORACLE APPLICATION DEVELOPER

Immediate opening for an Oracle Application Developer with five or more years' development experience in designing, implementing and maintaining database applications. Extensive knowledge of Oracle 7, PL/SQL, Oracle Tools and software validation required. Experience with clinical trial data in the pharmaceutical/biotechnology industry is desirable. Qualified candidates must have a degree in Computer Science/equivalent, experience with client/server applications and excellent written, verbal and organizational skills. Must be willing to travel internationally.

## NETWORK ANALYST

In this key position, you will administer and provide analytical support in a 350-user LAN/WAN environment consisting of Netware v3.x/v4.x OS, Lotus Notes 4.x running on NT servers and MS/Windows clients. You will also perform daily analysis and duties to ensure network efficiency, and maintain and administer Local Area Networks and systems including Netware 4.x Operating System, Lotus Notes and Windows/NT. To qualify, applicants must have a Bachelor's degree in a related field and a minimum of 3 years of experience with implementing and maintaining Local Area Networks for multi-site operation. IP services, inter/intranet networking and recovery skills required; UNIX experience a plus.

Please fax or forward resumes, including salary requirements, to: **SERONO LABORATORIES, INC.**, Human Resources Dept., 100 Longwater Circle, Norwell, MA 02061. FAX: (617) 982-9612. An equal opportunity employer.

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**Systems Analyst - Salary \$42,000.00 per year.** Hours 8:00 a.m. to 5:00 p.m., 40 hours per week. Job Duties: To analyze, design and develop software for financial and manufacturing applications to convert applications from IDMS, ADS/O TO CICS, DB2 on IBM 3090, using COBOL, JCL AND XPEDITER, INTERTEST, ADSALIVE AS DEBUGGING tools to lead the projects, project management using PM tools preferably MS-projects, system design, functional specifications and performance of applications. Education Requirement: Bachelors or equivalent degree in computer science or engineering. Experience Requirement: 2 years in the job offered or in the related occupation of systems or software engineer or consultant. Special Requirement: Required two year experience be in IBM 3090, MVS/XA, CICS, VSAM, IDMS, ADS/O, XPEDITER, INTERTEST, ADSALIVE, COBOL, JCL. Job located in Atlanta, GA. Send resume to or apply at: Georgia Department of Labor, Job Order # GA 6002828, 2943 N. Druid Hills Road, Atlanta, GA 30329-3909 or the nearest Department of Labor Field Service Office.

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## SYBASE DBA

Responsible for writing stored procedures; automating backup and restore process; capacity planning; performance tuning; data modeling; logical and physical design; and data security. Will have profound knowledge and experience with SYBASE (11 would be ideal), REPLICATION SERVER, ERWIN, POWERBUILDER, UNIX and WINDOWS NT. Good communication and interpersonal skills are essential.

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Programmer/Analyst required by Software Development & Computer Consulting Company. Duties: Planning, developing, testing and documenting computer programs, applying knowledge of programming techniques and computer systems; evaluating user requests for new modified programs to determine feasibility, cost and time required, compatibility with current system and computer capabilities, consult with users to identify current operating procedures and clarify program objectives; work towards the development of payroll accounting system using Power Builder, Sybase & Oracle. Job to be performed at Knoxville, TN and by travelling and relocating to various unanticipated client sites throughout the U.S. Requirement: A Bachelor's degree in either, Math, or Science, or Computer Science, or Engineering and one year experience either as a Programmer/Analyst or in the related occupation of Software Engineer/Systems Analyst. Must have minimum one year experience in Power Builder, Sybase and Oracle. Salary: \$45,000/yr; 40 hrs/wk, 8:00 a.m. to 5:00 p.m. Contact: Charles Turner, TN Dept. Of Employment Security, 311 Martin Luther King Blvd., P.O. Box 11088, Chattanooga, TN 37401-2088. Refer to Job Order # TN6200243.

Software Engineer (Burlington, MA) Dsgn, implmnt & execute procedures to assure s/ware product quality. Review s/ware functional specifications and prepare test specifications for execution. Prepare automated test procedures by writing C progs, UNIX shell scripts, programs for automated test tools & SQL code. Identify & isolate product defects. Review product implementation for conformance to specifications. Participate in formal inspections and assessments of specs, dsgn & code. Duties entail work with S/ware Quality Assurance Techqs & Methods, incl Test Specification, Dvlpmnt & Automation; Distributed Client/Server Testing; RDBMS Admin; SOL; C; & UNIX/PC/Windows. Req: BA or foreign equiv in Comp Sci or related field & 2yr exp in job offered or in related occup of S/ware Quality Assurance, Prgrmr Ana MIS Officer, or Sys Ana; OR MA or foreign equiv & 1 yr exp in job offered or related occup of S/ware Quality Assurance, Prgrmr Ana, MIS Officer or Sys Ana, 2yr exp (or 1 yr, as applic) must involve use of S/ware Quality Assurance Techqs & Methods, incl Test Specification, Dvlpmnt & Automation; Distributed Client/Server Testing; RDBMS Admin; SOL; C; & UNIX/PC/Windows. \$47,500/yr, 40 hrs/wk; 8:00 - 5:00, M-F. Overtime:n/a. Send resume in duplicate to Case #60849, PO Box 8968, Boston, MA 02114.

Programmer/Analyst, required by Software Development & Computer Consulting Company. Duties: Planning, developing, testing and documenting computer programs, applying knowledge of programming techniques and computer systems; evaluating user requests for new or modified programs to determine feasibility, cost and time required, compatibility with the current system and computer capabilities; consult with users to identify current operating procedures and clarify program objectives work towards provision of date access to customers under tight security checking with MS Visual C++, MFC as the front end and Sybase database servers as backend; compiling information, learning and teaching of latest software products and developments in the industry. Job to be performed at Knoxville, TN and by travelling and relocating to various unanticipated client sites throughout the U.S. Requirements: A Bachelor's degree in either, Math, or Science, or Computer Science, or Engineering and one year experience either as a Programmer/Analyst or in the related occupation as Software Engineer/Systems Analyst. Must have minimum one year experience in Visual C++, MFC, Sybase DB Lib. Salary: \$45,000/yr; 40 hrs/wk, 8:00 a.m. to 5:00 p.m. Contact: Charles Turner, TN Dept of Employment Security, 311 Martin Luther King Blvd., P.O. Box 11088, Chattanooga, TN 37401-2088. Refer to Job Order # TN6200244.

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Programmer/Analyst required by Software Development & Computer Consulting Company. Duties: Planning, developing, testing and documenting computer program, applying knowledge of programming techniques and computer systems, evaluating user requests for new or modified program to determine feasibility, cost and time required, compatibility with current systems and computer capabilities, consult with users to identify operating procedures and clarify program objectives with special reference to the migration of applications from mainframe environment to that of client server, work on the development of application packages involving the use of C++, Visual C++1.5, MFC 2.5, Unix, Microsoft SQL Server 4.2, and with different backends such as Sybase 10 and Oracle 7.0. Job to be performed at Knoxville, TN and by travelling and relocating to various client sites throughout the U.S. Requirements: A Bachelor's degree in either Math, or Science, or Computer Science, or Engineering and one year experience as either a Programmer Analyst or Software Engineer/System Analyst. Must have minimum one year experience in MS Visual C++, MFC, MS-SQL, Sybase and Oracle. 40 hours/week 8:00 a.m. to 5:00 p.m. Salary is \$45,000/yr. Contact Mr. Charles Turner, TN Dept. of Employment Security, 311 Martin Luther King Blvd., P.O. Box 11088, Chattanooga, TN 37401-2088. Refer to the Job Order # TN 6200246.

**PROGRAMMER/ANALYST:** Analyze, design, program & test computer programs applying knowledge of SMALLTALK (ParcPlace, VisualWorks). Requires knowledge of Object Oriented Analysis/Design/Development for the development of software & knowledge of Unix/DOS operating systems. Requires use of C++, C, TCP/IP Socket Programming, Unix Shell Scripts & Windows Programming. Confers w/ client to formulate & customize software programs; evaluates client requests for new or modified programs to determine feasibility, cost, time required, & compatibility with current systems & computer capabilities. Converts project specifications using Object Analysis & Design; programs them into SMALLTALK. Designs Graphical User Interface to accomplish goals of user requests. Uses diagnostic software to detect errors. Writes documentation to describe program development, logic, coding and corrections. Installs & tests at client's site. Supervise 2-5 employees. Requires knowledge of SMALLTALK. Requires B.S. in Electrical Eng. or Computer Sci.; Min. 6 mos exp. in Object Oriented Analysis & Design; 8:00am-6:00pm; 40 hrs wk; \$28.00 hr. Send resume to Job Service of Florida, Attn: Job Order # FL-1472159, 701 SW 27th Ave, Room 47, Miami, FL 33135-3014.

Communications Engineer: Dev./design/test digital telephony/broadband communications switch architecture/control software to implement Digital Electronic Switching Systems; production, debugging/bring-up integrated software; coding/overall switch ops aspects applying (prior specific knowledge not req) Digital Design, 80386/68000 architecture, Computer Network Architecture, C, CHILL, 80386 Assembly, SS7 Signalling, dBase, OS/2, UNIX, DOS & Solaris. Req: Bachelor's in Electrical/Communications/Computer Eng. or closely related discipline + 2 yrs exp or 2 yrs as Associate Information Technology Eng. \$36,000/yr, 40 hrs/wk, 8am-4:45pm. Submit resume to: Job Service of Florida, 2660 W. Oakland Park Blvd., Ft. Lauderdale, FL 33311-1347. Re: Job Order # - FL 1475959.

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New Orleans company seeks individual to manage its information systems department. Position will manage small staff responsible for project management, software development and maintenance. Must have strong life insurance/banking background, preferably with experience in sales illustration systems and strong knowledge of a client/server environment. Minimum of 3-5 years experience with SCO Unix, Informix-4GL and SQL, DOS and vi editor. Company offers an exciting environment and competitive compensation. Respond to: PO Box 19685, New Orleans, LA 70179-0685

Programmer/Analyst: (Atlanta). Develop, implement and test software for Internet banking applications. Design and develop: logical and physical databases; user interfaces and Common Gateway Script; database applications; maintenance support and fine-tuning; modifications; database dictionary system; program upgrades. M.A. in Computer Science, Elec. Eng. or equivalent. Six months experience required in: parallel relational DBMS; WAN or other networking; C++, query and database application languages. \$45,000/yr. 40 hrs/wk. Must have proof of legal authority to work in the U.S. Send resume in duplicate to Georgia Dept. of Labor, Job Order #GA6012740, 2943 N. Druid Hills Rd., Atlanta, GA 30329 or nearest Dept. of Labor Field Service Office.

**Programmer Analyst/Multimedia II:** Program, test and implement functional design requirements for multimedia project or system enhancement. Research, design, develop, test and implement multimedia computer programs designed to meet specifications handed down. Ensure efficient use of human and computer resources, ensure that documentation standards are adhered to and that technical proficiency is maintained. Assist project leader in the development of work plans and system design. Advise superiors of potential system shortfalls and/or errors. Mondays to Fridays, 9:00 am to 5:00pm. \$761.00 per week. Bsc. Degree, majoring in International Business and Computer Informational Systems, and 2 years experience. Applicants submit resume to: Job Service of Florida, 2660 West Oakland Park Blvd., Ft. Lauderdale, FL 33311-1347. Re: Job Order Number FL-1472974.

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To qualify, you must have a BS in BUS, CS or a related discipline and 10 years' applications development experience or a BSBS and 5-7 years' experience developing and coordinating IS projects. An understanding of the worker's compensation claims process, insurance agency/broker operations, and a client/server environment is required, as is in-depth knowledge of PCs and vendors. Excellent communication skills and demonstrated success with Visual Basic, PowerBuilder, Access, Sybase, SQL and multiple-systems environments as well as CNE designation are essential. MCNE designation and familiarity with C++ and UNIX are preferred. Ad # 96-1116

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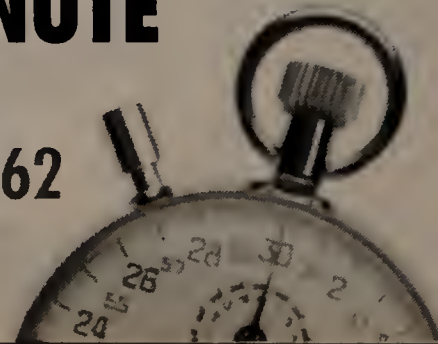
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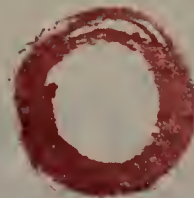
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**Group Leader, Software Engineer (OA):** Design and develop computer testing software for Paradigm Plus on X-Windows and OSF/Motif, using Fusion object-oriented methodologies; oversee activities of Software Engineers with respect to quality assurance operations related to Paradigm Plus product; evaluate and recommend a company wide testing tool to automate Paradigm Plus test plans; design and develop test scripts using QA Partner, Final Exam and MS Test for all platforms (Windows NT, 3.X, 95, Solaris, HP-UX, SunOS, SGI, AIX and OS/2). Six years college, M.S. degree in Computer Science, One year experience in position or two years experience as Software Engineer. Graduate coursework must include a course in each of the following subjects: Software Project Management, Principles & Applications of Software Design, Advanced Network Protocols, and Advanced Graphics Window Systems. Experience in related occupation must include work with second generation object-oriented methodologies (Fusion), object-oriented CASE Tools (Paradigm Plus), and the following platforms and networks: Windows 3.X, Solans, SunOS, SGI, HP-UX, TCP/IP, NETBIOS, SPX/IPX. 40 hrs/wk.; 8:00 am- 5:00 pm.; \$41,135/year. Must have proof of legal authority to work permanently in the U.S. Apply at the Texas Workforce Commission, Houston, Texas, or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701, J.O. # TX7856353. Ad Paid by An Equal Opportunity Employer.

**Software Engineer:** Analyze, design and implement IMSs (Information Management Systems) using Booch Method (Object-Oriented Analysis and Design Method), Novell Btrieve Database, Visual C++ and MFC (Microsoft Foundation Classes) on MS Windows. Develop computer graphics oriented products using technologies of algorithms design, GDI (Graphics Device Interface) and OLE (Object Linking and Embedding). Analyze knowledge based systems using knowledge of neural network and fuzzy logic. Provide time estimates and write test plans for software projects using software engineering management technology and related tools. Must have: 1) a Master's degree with an emphasis in Computer Science, or completion of all the requirements for the Master's degree; 2) Completion of one graduate course each in Database System Design, Computer Graphics and Computer Algorithms; 3) Six months of experience in the job offered or six months as a Research Assistant; and 4) The required six months experience must include development of an IMS using Booch Method, use of Neural Network, and programming with MFC and OLE. \$42,500/yr. 40 hrs/wk. 8:30-5:00. Send resume to: Mr. Aditya Nath, CGN & Associates, Inc., 415 S.W. Washington, Peoria, IL 61602.

## SOFTWARE ENGINEER

Design, develop, and test computer systems for business applications: analyze software requirements to determine feasibility of design and direct software system testing procedures using expertise in PowerBuilder 3.0/4.0, Sybase, Oracle 6.0/7.0, Informix and Uniface. **Requirements:** Bachelor's Degree in Computers, Physics or related fields, two years experience as Software Engineer or Computer Programmer, knowledge of PowerBuilder 3.0 and 4.0, Sybase, Oracle 6.0/7.0, Informix and Uniface. 40 hours per week, \$43,600/year. Send resume to: Greg Schwing, Office of Employment Security, 2100 Wharton Street, Pittsburgh, PA 15203, Job Order No. 9059577

**Systems Analyst,** 40 hrs/wk, 9am-5pm, \$32,159/yr. Analysis, design & implementation of computer systems. Database design & development. Information system management. Modification & update of existing systems. Documentation of system progress. User support. Tools: Visual Basic/Paradox; C++; Oracle; SQL; Excel. B.S. in Computer Science or Computer Information Systems as well as 1 yr in job offered or as Systems Administrator required. Previous experience must include: database design & development; Visual Basic; Paradox. Send resume with social security number to: Indiana Dept. of Workforce Development, 10 N. Senate Ave., Indianapolis, IN 46204-2277, ATTN: Sean Blancaneaux. ID# 3379756.

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Dave Drugman, President, Bay Cities Research, Inc.

**12:15pm Luncheon Keynote: Industry Trends**

Maryfran Johnson, Executive Editor, Computerworld

### Repeat of Concurrent Sessions

#### Town Hall Forum

Gary Cluff, President, Cluff and Associates

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The Governor is seeking applicants to provide leadership in redefining the role and direction of the Information Resource Commission in Florida, in consultation with the Legislature and state agencies.

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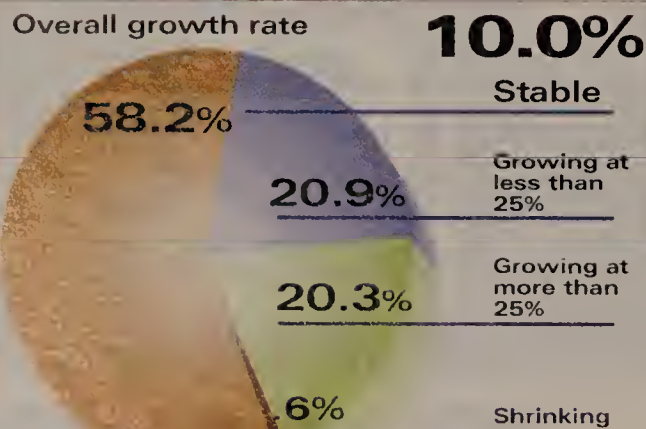
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# Marketplace

## Thinking about throwing away that code? *Don't refuse to reuse*

**"We get some reuse out of technical objects ... but we don't get any reuse out of business objects."**

— Bill Bedor, Medtronic



By Alan Radding

**L**ike motherhood and apple pie, everybody agrees that code reuse is a wonderful thing. The benefits of code reuse — greater developer productivity, faster development, lower costs and higher-quality code — can't be argued against. But how you achieve it and what types of code you reuse are subject to considerable debate. Even determining what constitutes an appropriate level of code reuse can generate heated discussion. For example, many industry experts toss around the figure of 80% or better code reuse as the goal. "But 80% code reuse can be misleading. It depends on what you measure," warns John Rymer, vice president of Giga Information Group in Cambridge, Mass.

### Types of reuse

If you build an application using Smalltalk, which provides thousands of classes out of the box, then you will get a high percentage of code reuse, Rymer explains. But these are low-level classes, which don't provide the high productivity most managers have in mind when they envision 80% reuse.

At the other end of the spectrum is the custom business or domain object. Here a project team creates a custom object, maybe a customer object, for one application, and it is reused by other teams on other projects. "This is very hard to do. Maybe you'd get 5% to 10% reuse," Rymer says. But when you do get reuse, productivity soars.

Then there is design reuse, where organi-

zations reuse design components in the early analysis, design and modeling stages of the development cycle. Here it is easy to reuse high-level business design objects. But beneficial as design reuse may be, it isn't code reuse. You still must write or generate the code.

Finally, there is component reuse. Components, typically based on Microsoft Corp.'s OLE/OCX-ActiveX standard, provide large chunks of prebuilt functionality that can be popped into an application as is. Reusable components provide much of the benefit of object reuse, but most components are difficult to customize beyond the limited parameter setting they allow.

### Practical reuse

"We get some reuse out of technical objects — screen design objects or objects that access data — but we don't get any reuse out of business objects," says Bill Bedor, director of information technologies at Medtronic, Inc. in Minneapolis. Medtronic programmers define a basic screen design as an object and then use object inheritance to create a hierarchy of more specialized screens from it.

Medtronic programmers get a significant productivity kick out of the reuse of technical code, but "we don't get anywhere near 80% reuse," Bedor says. But reuse, he argues, isn't the biggest benefit of object development. "The real advantage from objects is the ability to make changes very quickly," he says.

The problem with focusing on code reuse is the overhead it adds. If you stop to design for reuse, it slows down the application you are trying to knock out quickly. On the other

hand, consultants argue, if you don't plan for reuse from the start and create a reuse infrastructure, you won't get reuse except by accident.

### System plumbing

Andersen Consulting in Northbrook, Ill., achieves reuse by focusing on the system plumbing. "If you look at 100 Cobol programs, you'll find that 80% of the code doesn't deal with the specific problem but with the mechanics of how the application works, such as validation or database access," says Aaron Underwood, a partner at Andersen Consulting. As a result, the firm focuses on building reusable objects that handle plumbing, functions such as validation, security, transaction handling and database access.

While such reusable plumbing objects aren't glamorous, Underwood says, "they provide tremendous productivity, allowing the programmers to focus on the business problem." Andersen builds elements of the user interface as reusable objects that can be dropped into most applications. "It's a mistake to focus on the micro level, to worry about small routines and hope for wide reuse," counters Jeffrey Nickerson, technical director at Coopers & Lybrand in Edison, N.J.

The problem with achieving reuse of small pieces of code is that it's hard to find the code and figure out what it does. Most programmers find it easier and faster to rewrite a small validation routine or database access routine than to hunt for one already written. ■

Radding is a freelance writer in Newton, Mass.

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| <a href="http://www.innovationdp.fdr.com">http://www.innovationdp.fdr.com</a> |            | StorageTek . . . . .  | 38-39  |
| JD Edwards . . . . .  | 25         | <a href="http://www.storagetek.com">http://www.storagetek.com</a> |        |
| <a href="http://www.jdedwards.com">http://www.jdedwards.com</a>               |            | Sun Microsystems . . . . .  | 17     |
| Lawson Software . . . . .   | 51         | <a href="http://www.sun.com">http://www.sun.com</a>               |        |
| <a href="http://www.lawson.com">http://www.lawson.com</a>                     |            | Symbios Logic . . . . .   | 98     |
| (800)477-1357   |            | <a href="http://www.symbios.com">http://www.symbios.com</a>       |        |
| Leadership Series . . . . .   | 32/33      | Toshiba . . . . .   | 44, 45 |
| Lucent Technologies . . . . .   | 22-23      | <a href="http://www.toshiba.com">http://www.toshiba.com</a>       |        |
| <a href="http://www.lucent.com">http://www.lucent.com</a>                     |            | Workstation Group . . . . .                                       | 41     |
| Meta Group . . . . .  | 57         | <a href="http://www.wrkggrp.com">http://www.wrkggrp.com</a>       |        |
| Micro Focus . . . . .   | 11         | WRQ . . . . .   | 40     |
| <a href="http://www.microfocus.com">http://www.microfocus.com</a>             |            | <a href="http://www.wrq.com">http://www.wrq.com</a>               |        |
| (800) 872-6265  |            |   |        |
| Micron . . . . .  | 52         |   |        |
| <a href="http://www.micron">http://www.micron</a>                             |            |   |        |

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## Streetwise

By Chuck Phillips

# Weaving a Web of documents

Investors are rightfully skeptical of anything associated with the "paperless office," a worn-out phrase used far more often than the products it describes. Document management has been a sleepy market associated with expensive imaging systems and complicated workflow products. But the confluence of several technologies, including the World Wide Web, may just open up this market for a few well-positioned companies.

In the Web, the document management market has finally found an easy, standard way to archive, distribute and display documents. The Web is to unstructured data, such as documents and text files,

what relational databases are to structured data. It also upends the publishing hierarchy, making the end user a content publisher. This means that document management systems will have to easily

incorporate documents created with a variety of front-end tools.

The leader in the document management market is Documentum, Inc. (Nasdaq:DCTM), a Xerox Corp. spin-off that Morgan Stanley & Co. took public earlier this year. After the rout of technology stocks in the past month, the stock is hovering around its initial public offering price of \$24. Revenue grew 146% in 1995 and 77% in the second quarter. At this rate, the company's revenue should reach at least \$40 million this year.

Documentum focuses on upscale customers with elephantine document management problems. A key market for the company, for example, has been pharmaceutical firms, which can lose millions of dollars in revenue because of a delay in getting the thousands of documents associated with a new drug to the FDA. Similarly, the company has done well in the aerospace industry, where delays in filing with the FAA can ground expensive aircraft.



The first opportunity for Documentum to take advantage of the Web was to revamp its product so users could view documents over the Web. It shipped the new product, called Accelera, in the spring — significantly ahead of key competitor Saros Corp., a private company recently bought by FileNet Corp. (Nasdaq:FILE).

Second is the opportunity for Documentum to provide scalable, enterprise document management as part of the infrastructure of a Web server.

When Web servers are organizing millions of pages and the business processes affected by Web transactions become more critical, users are likely to begin sniffing around for something more sophisticated to manage all those documents.

Having the webmaster change an HTML page manually when he receives an E-mail message from marketing works fine for a simple company signpost on the Web. But when the firm is running a dynamic storefront heavily involved in electronic commerce,

that system will break down. Prices, products and promotions can change daily. For business-critical Web servers, the management process has to become more structured, secure, audited and distributed.

This is where enterprise-level document management firms that focus on comprehensive solutions, such as Documentum, can sparkle. As the market for document management has evolved, it has combined several technologies into one more easily understood and practical discipline. The market has moved toward a single integrated enterprise document management solution that spans the creation, capture, storage, rendering, markup, distribution and auditing of documents.

Documentum has taken the first step on its Web journey with Accelera. We expect the company to take an important second step, adding enterprise document management to third-party Web servers, by early next year.

Phillips is an enterprise software analyst at Morgan Stanley & Co., a global investment banking firm in New York. He welcomes comments at chasp@ms.com or (212) 761-4450.

# Intuit repackages online information

By Tam Harbert

Intuit, Inc., the company known for its personal finance program, Quicken, is now going after the online investor with Investor Insight.

Previously part of Quicken, the program was launched last spring as a stand-alone package to help investors track their securities. The company decided to unbundle the programs in order to make Investor Insight available to non-Quicken users, as well, according to the company.

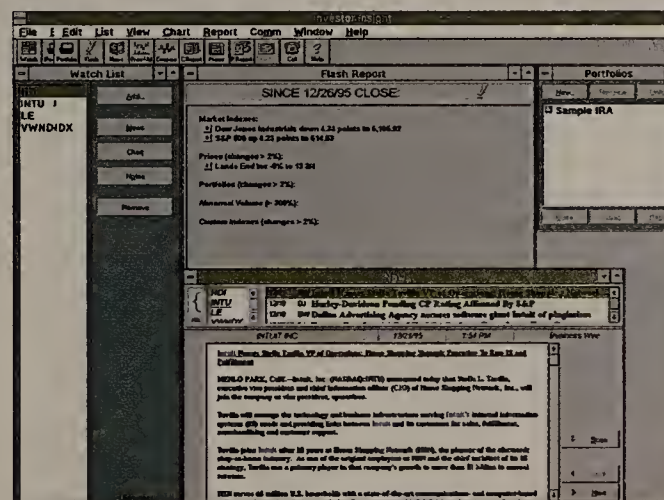
The product combines front-end software and an online service that delivers stock news, analysts ratings, company research reports and other data pulled from a variety of third-party sources on the Web, such as Standard & Poor's, The Wall Street Journal, the Dow Jones News Service, Barron's, Business Wire and PR Newswire.

Like other online services, the software itself is free (you can download it from [www.investorinsight.com](http://www.investorinsight.com)), but the online access isn't. The charge is \$9.95 per month to track up to 10 securities and \$19.95 per month for as many as 50 securities.

That money might be better spent on a good Internet access provider, because much of this data is already available from a variety of sources on the World Wide Web.

For example, you can access material from Barron's ([www.barrons.com](http://www.barrons.com)), Business Wire ([www.businesswire.com](http://www.businesswire.com)) and PR Newswire ([www.prnewswire.com](http://www.prnewswire.com)) for free on the Web. And news from Dow Jones and *The Wall Street Journal* can be had for a small fee.

In fact, *The Wall Street Journal Interactive Edition* ([www.wsj.com](http://www.wsj.com)) offers many of the same customization features as Investor Insight. Until recently,



Intuit's Investor Insight lets users track delayed quotes, news and historical information on as many as 50 securities

the site was free, but now it costs \$49 a year, or \$29 if you subscribe to the print edition.

What's more, the Web doesn't limit you to just 10, or even 50, stocks. True, you may have to initially spend a bit of time navigating through some of the online investment sites to find the information you need, but a few hours of Web

surfing can teach you enough about where to go to equal what Investor Insight delivers.

Also, the program can never keep up with the constant comings and goings of Wall Street. For example, the version 1 tried had no coverage for many of the initial public offerings launched this year, such as Lucent Technologies, Inc. or Red Brick Systems, Inc. It didn't even include Sync Research, Inc., which went public back in November 1995.

Intuit touts Investor Insight's ability to chart and analyze securities in a variety of ways, but some of that analysis is already available at many Web sites.

Unless you are a diehard Quicken fan who will be sold on the product because you can import data from a Quicken investment account to an Investor Insight portfolio, I see little reason to spend money to have repackaged information delivered to your electronic doorstep.



# The Week in Stocks



## Gainers



## Losers

### PERCENT

|                         |      |                            |       |
|-------------------------|------|----------------------------|-------|
| Intelligent Electronics | 27.6 | Software Publishing Corp.  | -24.4 |
| PSINet                  | 24.3 | Shiva Corp.                | -23.7 |
| Borland Int'l Inc.      | 22.4 | Cambox Corp.               | -21.1 |
| Inacom Corp. (H)        | 16.9 | Truevision Corp.           | -20.4 |
| Ocel Computer Corp.     | 14.7 | Dataware Technologies Inc. | -20.0 |
| Microage Inc.           | 13.4 | IPL Systems Inc.           | -20.0 |
| SCO Inc.                | 13.3 | Raptor Systems             | -16.2 |
| FTP Software Inc.       | 11.1 | Secure Computing Corp.     | -15.9 |

### DOLLAR

|                         |      |                         |        |
|-------------------------|------|-------------------------|--------|
| Paychex                 | 4.00 | Shiva Corp.             | -13.13 |
| Inacom Corp. (H)        | 3.81 | Security Dynamics Tech. | -9.13  |
| Ocel Computer Corp.     | 3.50 | Xylan Corp.             | -6.88  |
| Dell Computer Corp. (H) | 3.06 | Netscape Comm. Corp.    | -6.81  |
| 8GS Systems Inc.        | 2.50 | Ascend Communications   | -4.75  |
| McAfee Associates       | 2.50 | US Robotics             | -4.00  |
| Sungard Data Systems    | 2.38 | Hewlett Packard Co.     | -3.38  |
| NEC America             | 2.25 | Business Objects        | -3.38  |

## Industry Almanac

## Dark days for AOL

Pity poor America Online, Inc. [Nasdaq:AMER]. As if a stock price that has been in free fall since early May weren't bad enough, the company had a 19-hour network outage the day before it was to report its fourth-quarter earnings. Investors weren't exactly in a good mood, no matter what the news.

The earnings report carried respectable numbers. Fourth-quarter revenue doubled to \$334.5 million from a year ago.

Still, these numbers did little to quell some analysts' trepidations about the company. They are worried about the slowing growth in AOL's subscriber base and the skyrocketing cost of signing up new subscribers.

The marketing cost of capturing a subscriber rose from \$67 a year ago to \$240 this quarter, says Jeff Gorman, an analyst at Cowen & Co. in Boston.

In addition, the company added only about 300,000 new members in the latest quarter, compared with 700,000 new subscribers in the fourth quarter last year, he says.

But the subscriber base is still growing, another analyst says. He requested anonymity because his company doesn't have an official rating on the stock. AOL has roughly doubled the number of subscribers, to 6.2 million, since the beginning of the year.

And the company plans to bring down marketing costs by pulling back on its direct-mail deluge of disks and putting more emphasis on licensing agreements and bundling deals. For example, the next release of Windows 95 will ship with an AOL icon, an inexpensive way for users to sign up. — *Tam Harbert*

### Moving on down the line

AOL's stock peaked this spring and has fallen ever since



EXCH 52-WEEK RANGE AUG. 16WK NET WK PCT NOON CHANGE CHANGE

| Communications and Network Services |        |       |                             | OFF 1.92% |        |       |  |
|-------------------------------------|--------|-------|-----------------------------|-----------|--------|-------|--|
| COMS                                | 53.63  | 33.50 | 3 COM CORP.                 | 46.13     | -0.75  | -1.6  |  |
| AIT                                 | 66.88  | 47.75 | AMERITECH CORP.             | 54.38     | -1.63  | -2.9  |  |
| T                                   | 68.88  | 49.25 | AT & T                      | 55.75     | 0.88   | 1.6   |  |
| ASND                                | 71.25  | 15.25 | ASCEND COMMUNICATIONS       | 47.75     | -4.75  | -9.0  |  |
| BNYN                                | 13.63  | 5.13  | BANYAN SYSTEMS INC. (L)     | 5.88      | -0.50  | -7.8  |  |
| BAY                                 | 50.00  | 20.25 | BAY NETWORKS INC.           | 23.88     | -1.25  | -5.0  |  |
| BEL                                 | 80.38  | 43.50 | BELL ATLANTIC CORP.         | 59.00     | -1.00  | -1.7  |  |
| BLS                                 | 45.88  | 32.75 | BELLSOUTH CORP.             | 38.88     | -1.00  | -2.5  |  |
| BRKT                                | 32.75  | 6.88  | BROOKTROUT TECHNOLOGY       | 22.50     | 1.00   | 4.7   |  |
| CS                                  | 87.75  | 50.13 | CABLETRON SYSTEMS           | 63.25     | -1.38  | -2.1  |  |
| CSCC                                | 74.75  | 14.00 | CASCADE COMMUNICATIONS      | 67.25     | -2.38  | -3.4  |  |
| CGRM                                | 25.13  | 12.25 | CENTIGRAM COMMUNICATIONS    | 13.63     | -0.63  | -4.4  |  |
| CSCO                                | 59.38  | 29.25 | CISCO SYSTEMS INC. (H)      | 57.13     | -1.75  | -3.0  |  |
| CLIX                                | 9.25   | 4.50  | COMPRESSION LABS INC.       | 6.50      | -0.13  | -1.9  |  |
| CMNT                                | 10.50  | 4.00  | COMPUTER NETWORK TECH.      | 5.50      | -0.50  | -8.3  |  |
| XCOC                                | 14.50  | 8.00  | CROSSCOMM                   | 9.50      | -0.13  | -1.3  |  |
| DIGI                                | 64.00  | 21.88 | DSC COMMUNICATIONS          | 31.50     | -0.56  | -1.8  |  |
| FORE                                | 44.75  | 15.38 | FORE SYSTEMS INC.           | 32.50     | 1.88   | 6.1   |  |
| GDC                                 | 21.88  | 9.13  | GENERAL DATACOMM INDS.      | 11.50     | 0.00   | 0.0   |  |
| GSX                                 | 40.13  | 28.00 | GENERAL SIGNAL NETWORKS     | 39.63     | 0.38   | 1.0   |  |
| GTE                                 | 49.25  | 35.63 | GTE CORP.                   | 41.25     | -0.38  | -0.9  |  |
| LU                                  | 39.25  | 29.75 | LUENT TECH.                 | 37.75     | 0.88   | 2.4   |  |
| MCIC                                | 31.13  | 22.38 | MCI COMMUNICATIONS CORP.    | 27.06     | 0.81   | 3.1   |  |
| MNPI                                | 34.50  | 5.50  | MICROMIC INC.               | 8.88      | -0.50  | -5.3  |  |
| NETM                                | 34.00  | 7.63  | NETMANAGE INC.              | 9.50      | 0.13   | 1.3   |  |
| NTRX                                | 10.88  | 3.63  | NETRIX CORP.                | 6.50      | -0.88  | -11.9 |  |
| NCDI                                | 10.88  | 2.88  | NETWORK COMPUTING DEVICES   | 4.63      | 0.13   | 2.8   |  |
| NWK                                 | 42.00  | 11.50 | NETWORK EQUIPMENT TECH.     | 11.75     | -0.75  | -6.0  |  |
| NETG                                | 27.63  | 15.00 | NETWORK GENERAL             | 17.63     | -2.13  | -10.8 |  |
| NN                                  | 74.25  | 25.00 | NEWBRIDGE NETWORKS CORP.    | 48.00     | 1.38   | 2.9   |  |
| NT                                  | 55.88  | 31.50 | NORTHERN TELECOM LTD.       | 50.50     | 0.13   | 0.2   |  |
| NOVL                                | 21.63  | 10.13 | NOVELL INC.                 | 11.38     | -0.56  | -4.7  |  |
| NYN                                 | 59.25  | 43.63 | NYNEX CORP.                 | 44.88     | -0.13  | -0.3  |  |
| OCTL                                | 27.38  | 12.63 | OCTEL COMMUNICATIONS CORP.  | 27.38     | 3.50   | 14.7  |  |
| ODSI                                | 43.25  | 16.50 | OPTICAL DATA SYSTEMS INC.   | 20.25     | -0.75  | -3.6  |  |
| PAC                                 | 35.25  | 25.88 | PACIFIC TELESIS             | 34.25     | -0.13  | -0.4  |  |
| PCTL                                | 44.72  | 20.75 | PICTURETEL CORP.            | 36.25     | -1.13  | -3.0  |  |
| PTON                                | 10.75  | 2.38  | PROTEON INC.                | 2.94      | -0.31  | -9.6  |  |
| RACO                                | 7.63   | 3.88  | RACOTEK INC.                | 4.25      | 0.00   | 0.0   |  |
| RETX                                | 10.88  | 1.81  | RETIX                       | 6.38      | 0.31   | 5.2   |  |
| SBC                                 | 60.25  | 46.25 | SBC COMMUNICATIONS          | 49.50     | -0.13  | -0.3  |  |
| SFA                                 | 22.00  | 11.38 | SCIENTIFIC ATLANTA INC.     | 13.88     | 0.25   | 1.8   |  |
| SHVA                                | 87.25  | 20.38 | SHIVA CORP.                 | 42.25     | -13.13 | -23.7 |  |
| FON                                 | 45.50  | 29.25 | SPRINT CORP.                | 39.88     | 1.38   | 3.6   |  |
| SMSC                                | 23.50  | 10.25 | STANDARD MICROSYSTEMS CORP. | 12.88     | 0.94   | 7.9   |  |
| TBIT                                | 13.88  | 2.38  | TELEBIT CORP.               | 13.00     | 0.13   | 1.0   |  |
| USRX                                | 105.50 | 32.25 | US ROBOTICS                 | 48.88     | -4.00  | -7.6  |  |
| USW                                 | 48.38  | 28.38 | U S WEST INC.               | 30.75     | -0.25  | -0.8  |  |
| XIRC                                | 17.50  | 8.88  | XIRCOM                      | 13.88     | 0.50   | 3.7   |  |
| XYLN                                | 76.00  | 34.00 | XYLAN CORP.                 | 40.88     | -6.88  | -14.4 |  |

EXCH 52-WEEK RANGE AUG. 16WK NET WK PCT NOON CHANGE CHANGE

| PCs and Workstations |       |       |                           | UP 0.32% |       |      |  |
|----------------------|-------|-------|---------------------------|----------|-------|------|--|
| AALR                 | 10.38 | 5.88  | ADVANCED LOGIC RESEARCH   | 7.50     | -0.75 | -9.1 |  |
| AAPL                 | 46.25 | 16.00 | APPLE COMPUTER INC.       | 22.50    | -0.50 | -2.2 |  |
| ASTA                 | 14.38 | 4.38  | AST RESEARCH INC.         | 5.13     | 0.13  | 2.5  |  |
| CPQ                  | 58.75 | 35.88 | COMPAQ COMPUTER CORP. (H) | 58.38    | 1.25  | 2.2  |  |
| DELL                 | 61.31 | 23.00 | DELL COMPUTER CORP. (H)   | 61.00    | 3.06  | 5.3  |  |
| GATE                 | 42.63 | 18.00 | GATEWAY 2000 INC.         | 41.50    | 1.06  | 2.6  |  |
| HWP                  | 57.75 | 36.88 | HEWLETT PACKARD CO.       | 42.13    | -3.38 | -7.4 |  |
| MUEI                 | 29.88 | 8.75  | MICRON INTERNATIONAL INC. | 15.00    | 1.00  | 7.1  |  |
| NIPNY                | 75.13 | 49.88 | NEC AMERICA               | 54.75    | 2.25  | 4.3  |  |
| SGI                  | 44.88 | 20.00 | SILICON GRAPHICS          | 23.25    | -0.13 | -0.5 |  |
| SUNW                 | 67.13 | 24.13 | SUN MICROSYSTEMS INC.     | 55.13    | -0.75 | -1.3 |  |

EXCH 52-WEEK RANGE AUG. 16WK NET WK PCT NOON CHANGE CHANGE

| Large Systems |        |       |                         | OFF 1.71% |       |      |  |
|---------------|--------|-------|-------------------------|-----------|-------|------|--|
| AMH           | 13.50  | 6.75  | AMDAHL CORP.            | 10.63     | 0.63  | 6.3  |  |
| DGN           | 19.13  | 8.88  | DATA GENERAL CORP.      | 10.88     | 0.13  | 1.2  |  |
| DEC           | 76.50  | 30.50 | DIGITAL EQUIPMENT CORP. | 38.00     | -2.25 | -5.6 |  |
| IBM           | 128.88 | 83.13 | IBM                     | 111.00    | -2.38 | -2.1 |  |
| MDCD          | 20.25  | 6.25  | MERIDIAN DATA INC.      | 8.88      | -0.25 | -2.7 |  |
| NETF          | 7.50   | 2.75  | NETFRAME                | 3.13      | -0.13 | -3.8 |  |
| SQNT          | 25.38  | 10.13 | SEQUENT COMPUTER SYS.   | 11.75     | -0.13 | -1.1 |  |
| SEQS          | 8.50   | 1.88  | SEQUOIA SYSTEMS INC.    | 2.25      | -0.13 | -5.3 |  |
| SRA           | 36.13  | 16.63 | STRATUS COMPUTER INC.   | 19.75     | 0.38  | 1.9  |  |
| TDM           | 15.25  | 8.38  | TANDEM COMPUTERS INC.   | 10.75     | -0.88 | -7.5 |  |
| UIS           | 9.13   | 5.38  | UNISYS CORP.            | 5.88      | 0.00  | 0.0  |  |

EXCH 52-WEEK RANGE AUG. 16WK NET WK PCT NOON CHANGE CHANGE

| Software |        |       |                            | OFF 1.77% |       |       |  |
|----------|--------|-------|----------------------------|-----------|-------|-------|--|
| ADBE     | 74.25  | 28.50 | ADOBE SYSTEMS INC.         | 32.88     | -0.13 | -0.4  |  |
| AMSWA    | 8.75   | 3.63  | AMERICAN SOFTWARE INC.     | 5.25      | 0.50  | 10.5  |  |
| APLX     | 42.50  | 8.25  | APPLIX INC.                | 25.00     | -0.25 | -1.0  |  |
| ARSW     | 82.75  | 28.75 | ARBOR SOFTWARE             | 41.00     | -1.00 | -2.4  |  |
| ADSK     | 53.00  | 19.38 | AUTODESK INC. (L)          | 20.63     | -1.38 | -6.3  |  |
| BGSS     | 50.00  | 29.75 | BGS SYSTEMS INC.           | 47.00     | 2.50  | 5.6   |  |
| BMCS     | 71.50  | 32.50 | BMC SOFTWARE INC. (H)      | 69.00     | 0.75  | 1.1   |  |
| BOOL     | 26.75  | 19.25 | BOOLE AND BABBAGE          | 25.00     | 0.75  | 3.1   |  |
| BORL     | 21.25  | 6.06  | BORLAND INT'L INC.         | 8.88      | 1.63  | 22.4  |  |
| BOBY     | 55.50  | 16.88 | BUSINESS OBJECTS           | 19.75     | -3.38 | -14.6 |  |
| CAYN     | 11.88  | 4.00  | CAYENNE SOFTWARE INC. (L)  | 4.25      | 0.13  | 3.0   |  |
| CYE      | 27.88  | 14.13 | CHEYENNE SOFTWARE INC.     | 19.63     | -0.13 | -0.6  |  |
| COGNI    | 27.38  | 9.75  | COGNDS INC.                | 22.25     | 0.50  | 2.3   |  |
| CA       | 58.63  | 24.88 | COMPUTER ASSOCIATES        | 57.63     | 0.50  | 0.9   |  |
| CVN      | 15.50  | 5.75  | COMPUTERVISION CORP.       | 6.75      | -0.25 | -3.6  |  |
| CPWR     | 44.88  | 15.50 | COMPUWARE CORP. (H)        | 44.88     | 2.00  | 4.7   |  |
| CSRE     | 32.00  | 10.75 | COMSHARE INC.              | 14.13     | 0.38  | 2.7   |  |
| COSFF    | 19.13  | 8.25  | COREL CORP.                | 8.75      | 0.00  | 0.0   |  |
| DWTI     | 14.13  | 3.25  | DATAWARE TECHNOLOGIES INC. | 4.00      | -1.00 | -20.0 |  |
| FILE     | 67.00  | 20.00 | FILENET CORP.              | 24.00     | -2.88 | -10.7 |  |
| FRTE     | 81.75  | 24.75 | FORTE SOFTWARE             | 32.75     | -1.25 | -3.7  |  |
| DDDD     | 8.25   | 3.56  | 4TH DIMENSION              | 4.88      | 0.00  | 0.0   |  |
| FTPS     | 40.63  | 5.88  | FTP SOFTWARE INC.          | 8.75      | 0.88  | 11.1  |  |
| GPTA     | 10.50  | 3.50  | GUPTA                      | 4.38      | -0.38 | -7.9  |  |
| HUM      | 28.88  | 15.00 | HUMMINGBIRD COMM. LTD.     | 18.63     | -0.38 | -2.0  |  |
| HYSW     | 28.38  | 9.75  | HYPERION SOFTWARE CORP.    | 12.19     | -0.31 | -2.5  |  |
| IRIC     | 16.25  | 10.00 | INFORMATION RESOURCES      | 12.38     | -0.25 | -2.0  |  |
| IFMX     | 36.75  | 16.88 | INFORMIX CORP.             | 25.50     | -0.75 | -2.9  |  |
| INGR     | 20.13  | 9.25  | INTERGRAPH CORP.           | 9.44      | -0.50 | -5.0  |  |
| LEAF     | 12.63  | 3.63  | INTERLEAF INC.             | 4.25      | 0.00  | 0.0   |  |
| ISLI     | 25.25  | 8.00  | INTERSOLV INC.             | 8.00      | -1.25 | -13.5 |  |
| INTU     | 89.25  | 31.75 | INTUIT INC.                | 38.25     | -1.13 | -2.9  |  |
| LGWX     | 22.25  | 8.25  | LOGIC WORKS (L)            | 9.25      | 0.00  | 0.0   |  |
| MAPS     | 24.00  | 7.50  | MAPINFO CORP.              | 10.25     | -0.25 | -2.4  |  |
| MATH     | 9.25   | 4.63  | MATHSOFT                   | 6.50      | -0.63 | -8.8  |  |
| MCAF     | 64.50  | 17.38 | McAfee Associates          | 64.50     | 2.50  | 4.0   |  |
| MENT     | 22.88  | 10.88 | MENTOR GRAPHICS            | 13.94     | 0.19  | 1.4   |  |
| MIFGY    | 21.25  | 8.25  | MICRO FOCUS                | 11.38     | 0.38  | 3.4   |  |
| MGXI     | 18.63  | 8.88  | MICROGRAFX INC.            | 11.63     | -0.88 | -7.0  |  |
| MSFT     | 126.13 | 79.88 | MICROSOFT CORP. (H)        | 124.38    | -0.63 | -0.5  |  |
| ORCL     | 42.13  | 23.38 | ORACLE CORP. (H)           | 40.00     | -1.50 | -3.6  |  |
| PMTC     | 49.50  | 25.38 | PARAMETRIC TECHNOLOGY      | 44.38     | -1.00 | -2.2  |  |
| PARQ     | 14.63  | 4.38  | PARCPLACE SYSTEMS INC.     | 4.88      | 0.00  | 0.0   |  |
| PSFT     | 79.00  | 32.38 | PEOPLESOFT (H)             | 76.75     | 1.25  | 1.7   |  |
| PTEC     | 20.38  | 9.88  | PHOENIX TECHNOLOGIES       | 18.75     | 1.00  | 5.6   |  |
| PSQL     | 15.38  | 3.13  | PLATINUM SOFTWARE          | 9.75      | 0.25  | 2.6   |  |
| PLAT     | 26.00  | 9.25  | PLATINUM TECHNOLOGY        | 10.75     | -0.25 | -2.3  |  |
| PRGS     | 38.00  | 12.13 | PROGRESS SOFTWARE CORP.    | 13.38     | 0.50  | 3.9   |  |
| RN80     | 25.50  | 14.63 | RAINBOW TECHNOLOGIES INC.  | 18.13     | 0.00  | 0.0   |  |

EXCH 52-WEEK RANGE AUG. 16WK NET WK PCT NOON CHANGE CHANGE

|      |        |       |                            |       |       |       |
|------|--------|-------|----------------------------|-------|-------|-------|
| REDB | 61.00  | 18.25 | RED BRICK SYSTEMS INC.     | 23.00 | 0.25  | 1.1   |
| ROSS | 8.13   | 2.19  | ROSS SYSTEMS               | 5.50  | -0.38 | -6.4  |
| SAPE | 58.25  | 29.25 | SAPIENT CORP.              | 45.00 | 1.00  | 2.3   |
| SCOC | 12.13  | 5.50  | SCO INC.                   | 6.94  | 0.81  | 13.3  |
| SDTI | 109.00 | 18.38 | SECURITY DYNAMICS TECH.    | 67.38 | -9.13 | -11.9 |
| SKEY | 51.75  | 13.38 | SOFTKEY INTERNATIONAL INC. | 17.63 | -2.25 | -11.3 |
| SPCO | 5.13   | 1.94  | SOFTWARE PUBLISHING CORP.  | 1.94  | -0.63 | -24.4 |
| SQAX | 39.75  | 16.00 | SQA INC.                   | 21.00 | -2.63 | -11.1 |
| SOTA | 19.75  | 7.75  | STATE OF THE ART           | 17.00 | -0.25 | -1.4  |
| SSW  | 81.38  | 40.00 | STERLING SOFTWARE INC.     | 70.75 | -0.75 | -1.0  |
| SDRC | 37.38  | 14.38 | STRUCT. DYNAMICS RESEARCH  | 17.25 | -1.88 | -9.8  |
| SY8S | 39.75  | 15.38 | SYBASE INC.                | 17.88 | -0.13 | -0.7  |
| SYMC | 33.25  | 8.75  | SYMANTEC CORP.             | 10.75 | -0.50 | -4.4  |
| SNPS | 46.75  | 23.00 | SYNOPSYS                   | 38.00 | -1.88 | -4.7  |
| SSAX | 30.63  | 8.25  | SYSTEM SOFTWARE ASSOC. (L) | 9.63  | 0.63  | 6.9   |
| SYSF | 30.38  | 4.38  | SYSTEMSOFT CORP.           | 26.00 | 0.25  | 1.0   |
| TRUV | 10.13  | 4.63  | TRUIVISION CORP.           | 4.88  | -1.25 | -20.4 |
| VIEW | 17.50  | 9.63  | VIEWLOGIC SYSTEMS          | 14.06 | 0.06  | 0.4   |
| VMRK | 19.25  | 5.75  | VMARK SOFTWARE INC.        | 9.13  | -0.25 | -2.7  |
| WALK | 12.75  | 6.13  | WALKER INTERACTIVE SYSTEMS | 11.00 | 0.00  | 0.0   |
| WALL | 26.25  | 13.00 | WALL DATA INC.             | 24.50 | 1.00  | 4.3   |
| WANG | 26.13  | 14.50 | WANG LABORATORIES INC.     | 18.25 | -1.25 | -6.6  |



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| Brandenburg Consulting ..... 59                   | Eagle Point Software Corp. .... 49                | Intersolv, Inc. .... 20                        | Nynex Corp. .... 72                                      | Sun Microsystems, Inc. .... 1,7,14,43,50,65,101   |   |
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| Cambio Networks, Inc. .... 53                     |   | LAN-ACES, Inc. .... 8                          | Oracle Corp. .... 2,12,14,26,43,65                       | Texas Instruments, Inc. .... 24                   |   |
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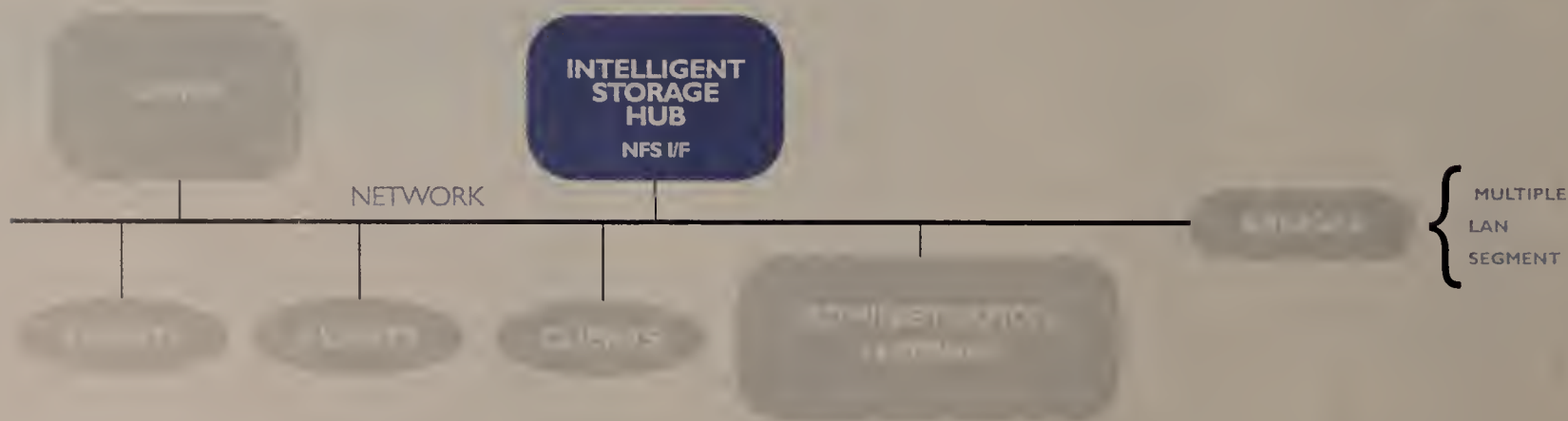
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## All the comforts of the office

**D**edicated road warriors say they are glad business hotels are starting to heed their calls for rooms equipped with the technological and ergonomic features needed to work remotely.

But they also have very definite ideas about what they want to see in the travel lodges of the future.

For instance, several users said in-room fax machines are key. "I stayed at one hotel that wanted to charge \$5 per page per fax," lawyer and author Dan Coolidge said. "I got an 80-page fax, and they wanted to charge me \$400. So I said that for that money, I could buy a fax machine, which I did. And I never stayed at that hotel again."

Others said rooms with special wiring for Internet access are important.

Marvin Chow, an interactive marketing manager at Reebok Corp. in Stoughton, Mass., uses an Apple Computer, Inc. Macintosh 5300 laptop and travels with a 20-foot extension cord and an Ethernet cord to

provide Internet access. He said some hotels are starting to offer direct Internet connections from their rooms.

"In the future, it will have to be like that," Chow said. "It's 30 to 40 times slower when you use a phone line."

John Girard, an analyst at Gartner Group, Inc. in Stamford, Conn., said most major hotel chain rooms provide little more than a phone jack. "If two lines and a speaker phone were available at a hotel, it would make people happy over the next couple of years," he said.

And Chuck Rush, global network architect for McDonald's Corp., has already found his dream room — at the Fairmont Hotel in San Jose, Calif.

"I'd like to see everything look like the Fairmont," he said. That hotel's rooms offer a large desk with a fax and two telephones — one in the bathroom and one on the desk — and three phone lines to accommodate fax, data and voice. — *Mindy Blodgett and Kim Girard*

# High tech checks in

CONTINUED FROM PAGE 1

5-pound tool kit, in case he needs to fiddle with phone lines in hotel rooms.

"The most annoying thing is to find that there's one phone line and no separate jack to put the modem in," Rush said. "And the phone is by the bed, and the desk is on the other side of the room. You've got to take the jack apart, and you can't use the phone when you use the PC."

### Room service

As hotels start to heed those frustrations, the changes take many forms. Some hotels offer technological advances such as T1 or Integrated Services Digital Network (ISDN) phone lines to guest and conference rooms. Some hotels wire guest rooms for direct Internet access via a local Internet service provider. Others are adding fax machines to guest rooms and room safes large enough to hold laptops. Simpler changes such as bigger desks, extra phones and electrical plugs are being added to guest rooms at other hotels.

Such amenities for business travelers will "almost become mandatory" for hotels that want to stay competitive, according to Brad Edwards, general manager at the Renaissance Hotel.

How much those advances will add to room costs isn't clear, according to industry observers. Some hotels may simply absorb the costs as a necessary way to lure business travelers. Many are experimenting with the market; so far, they don't charge extra for technological niceties.

Among the hoteliers wiring in and logging on are the following:

- The 800-room Renaissance Hotel in Washington has spent about \$25,000 to wire the conference and meeting rooms with T1 phone lines to speed Internet connections for presentations. Edward says, some guest rooms are being fitted with

Internet hookups and T1 lines. (The hotel hasn't decided whether to charge more for those rooms.) Special "E-mail kiosks" — pay phones that are linked to a local Internet service provider — are provided in the lobby.

- Marriott Lodging has teamed with AT&T Corp. to equip 9,000 guest rooms in 80 of its 281 hotels

have gathered momentum in recent months, according to users.

"Two years ago you had to call ahead to make sure there was a data port; now that is pretty standard," said Dan Coolidge, an attorney who co-wrote *A Survival Guide for Road Warriors*, a book aimed at lawyers.

William Sweetland, director of



Computer Sciences' Brent Price recommends in-room fax machines to ensure security

## Baranof ships tools to monitor Internet E-mail

By Tim Ouellette

Business use of electronic mail based on Internet standards will get another boost this week when Baranof Software, Inc. ships E-mail management software for intranet mail systems.

MailCheck: Intranet Edition from Baranof in Watertown, Mass., provides the management piece of the puzzle for E-mail systems based on the Internet's Simple Mail Transfer Protocol (SMTP) and Post Office Protocol (POP).

But other pieces of the puzzle — directory services, security, reliability and service — need to be filled in before Internet mail becomes an alternative to the proprietary E-mail systems that dominate the market [CW, Aug. 12].

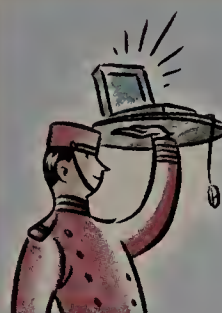
Analysts said the addition of those features could attract users who are trying to decide how to

upgrade their aging legacy systems. A recent survey conducted by Radicati Group, Inc. in Palo Alto, Calif., found that an almost equal number of corporate sites plan to adopt SMTP-based messaging backbones as those based on the X.400 standard used today.

For example, Baranof customer Prudential Securities, Inc. has been stymied from using SMTP-based E-mail systems because the Securities and Exchange Commission mandates that E-mail systems have a reliable management component.

Prudential won't be ripping out its CC:Mail installation — from Lotus Development Corp. — anytime soon.

But the addition of MailCheck to the SMTP E-mail mix gives the firm a reason to test intranet E-mail for future use, said John Casey, vice president of business development at Baranof.



### Ever upward

International Data Corp. (IDC) has increased its notebook shipment forecast for this year. Originally, IDC predicted that 4.3 million notebooks would ship in the U.S. this year, a 23.1% growth in the market. But IDC revised its forecast to 4.8 million, a 33.8% increase over last year.

worldwide with workstations that offer two power outlets, an ergonomic chair, a work table, a PC modem jack mounted in the console top and a movable light.

- Fairmont Hotel, with six U.S. locations, offers a fax machine in every room, along with a two-line speaker phone and a separate ISDN modem line. The Fairmont in San Jose, Calif., provides T1-line access in meeting rooms.

- And the Palace Hotel in Manhattan is renovating its 900 guest rooms with oversize desks equipped with fax machines that also work as printers and copiers. It will add data ports above desks and safes big enough for laptops.

Those changes

conferences at Ragan Communications, Inc. in Chicago, hailed the innovations. But he said hotels need to beef up their information technology, telecommunications and audio/visual staffs — just as they ensure there are enough room-service waiters.

### IT on call

"Hotel telecommunications and information systems are often the forgotten stepchildren of the place," Sweetland said. "They are usually run by some underpaid functionary. The smart hotels understand you can't have an IT guy who goes home at 5 p.m. and doesn't understand the telecommunications system."

The changes, while dramatic, are still too slow for some.

Brent Price, a computer scientist at Computer Sciences Corp. in Herndon, Va., says hotels typically offer poor access.

Price is working on a project for the Pentagon and travels several times a month with a Compaq Computer Corp. laptop. He said he would like to see in-room fax machines.





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|   | SUITE<br>SPOT | BACK<br>OFFICE | LOTUS<br>NOTES           |
|---|---------------|----------------|--------------------------|
| Standards-Based<br>Mail, Messaging &<br>Discussion Apps   | Yes           | Proprietary    | Proprietary              |
| Standards-Based<br>Distributed Search &<br>Indexing       | Yes           | No             | Only Thru<br>Replication |
| Server-Based Java<br>& Javascript                         | Yes           | No             | No                       |
| Native Support For<br>Oracle, Sybase,<br>Informix, & ODBC | Yes           | ODBC Only      | ODBC Only                |
| Cost w/1,000 Clients                                      | \$33,104      | \$178,064      | \$277,820                |

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David Coursey

# Like it or not, here comes Bob 97

There are people — you know who you are — who say Microsoft doesn't keep its promises. Another group wishes Microsoft wouldn't keep its promises.

But there is one thing I've found that these two groups agree upon: Bill Gates is serious when he promised Microsoft would continue working on "social interfaces" regardless of whether Microsoft Bob sold one copy or 1 million.

Development on Microsoft Bob, which was released in late 1994, is officially "idle." But you know what they say about idle hands and minds. When Microsoft Office 97 premieres late this year, it will have a new, unified help system called Office Assistant, aka Bob 97.

In case you don't remember, Bob was a Windows shell program applet collection that used various characters to provide interactive help, usually whether you wanted it or not. The idea was that novice users want to interact with their computer as though it had an IQ that was somewhere between their boss' and that of the ficus tree in the corner.

My favorite Bob character was Rover the Dog, which even had animated doggy dreams if the computer was left idle long enough.

Most people made fun of Bob, which was easy enough to do.

But the idea of a social interface hasn't gone away. And I'm glad. Not because it provides fodder for snitty columns but because social interfaces are a good idea, Bob notwithstanding.

Computers aren't nearly easy enough to use, especially when you're trodding through unfamiliar territory. A social interface, in which users interact with the software on human terms rather than computer terms, can be a great

help. Microsoft Bob was just the unfortunate beginning.

Office Assistant offers users a choice of characters that range from an animated paper clip or smiley face to Shakespeare. Each provides a different level of help presented in a way that creates a personality for each character. The most popular choice worldwide is an Albert Einstein character called "Genius."

The character lives in a small box on the screen. There are sound effects and animation but no speech. Microsoft has improved its natural language capabilities, allowing users to enter help queries in their own words.

Unlike Bob, Office Assistant is just a help and teaching system that can be used or ignored as desired. The characters are also much less cute than Bob's and have been extensively tested to assure acceptance by Office's worldwide audience. This has become especially important since Microsoft products —

most recently the unintentionally racist Spanish language thesaurus sold in Mexico — have suffered on the political correctness front.

A Microsoft product manager told me that the cross-cultural differences in reactions to the Office Assistant characters are less significant than those within a single culture. And even more interestingly, people in the same profession tended to choose the same character on a global basis.

While I didn't think much of Bob, I think Office Assistant and its successors will be a hit if only because they hide the fact that developers still don't know how to build applications that are both powerful and easy to use.



Coursey is an industry analyst, consultant and editor in chief of "coursey.com," an on-line newsletter that covers personal computing, the Internet and communications. Got a gripe or an idea? Write him at david@coursey.com or visit www.coursey.com.

Charles Babcock

# Apple: Gee, thanks, Microsoft

Microsoft's attempt to limit the use of Windows NT Workstation as a Web server may have inadvertently opened a window of opportunity for Apple.

Many sponsors of small World Wide Web sites were perfectly happy with Windows NT Workstation as their Web server.

Take Tim O'Reilly, president of O'Reilly & Associates, Inc. in Sebastopol, Calif., for example. He protested Microsoft's move, which limits to 10 the number of TCP/IP connections to NT Workstation in any given 10-minute period, as one that effectively eliminates NT Workstation as a Web server option.

So how does all this help Apple? Some customers will balk at using NT Workstation and NT Server at all, opening the door for some low-end converts to Apple.

Before you put that down to wishful thinking, consider the following:

1) Despite Apple's inability to manage its finances, demand for the Macintosh remains strong, fueled by activity on the Web. The Macintosh is considered one

of the top development platforms for authoring Web page content.

2) Apple's position as a supplier of servers for the Web is surprisingly strong. An estimated 15% of all Web servers use the Macintosh operating system, according to International Data Corp. That figure is lower for commercial sites and higher for academic ones, however.

Sun Microsystems is an example of a clear-cut winner on the Web. But unlike Apple, the reasons for its pre-eminence are clear. It sells thousands of Solaris machines as Web servers because much of the Internet's development springs from the Unix community. Sun is the dominant Unix development platform, and as the Web grew in popularity,

Sun came out with the leading development language, Java.

Apple has done none of those things. As opportunity beckoned, it stumbled over its own finances, repeatedly failed to predict demand for the Macintosh, ousted its CEO and offered no clear explanation of what it planned to do next.

But the popularity of its products on the Web is giving Apple another chance.

Thanks to the Macintosh's strength in graphics and multimedia, the user community made a quick conversion from desktop publishing to Web page publishing. And many of those graphic artists and content authors have been asking that their work be displayed on the same platform on which it was created. That isn't necessarily logical, but it is the way decisions often are being made — outside the influence of the IS department.

There are at least as many webmasters tapped from outside IS, I think, as from within it. Given the choice to work

with a familiar Macintosh or learn Unix, what's a webmaster to do?

Just last week, *The Wall Street Journal* reported that Microsoft is offering \$100,000 in cash to software developers who work on Internet products for the Macintosh. Microsoft clearly no longer conceives of Apple as a threat to Windows. Indeed, it appears worried that Apple is no longer viable. If Apple fails, Microsoft would look even more like a monopoly in the eyes of the U.S. Department of Justice than it does today.

But Apple could end up with more of a prize than Microsoft intends to give: the loyalty of the creative community as it shifts en masse to the Web. More than it ever intended to do, Microsoft may be boosting Apple's Internet prospects with its clumsy maneuvering around NT Workstation.



Babcock is *Computerworld's* technical editor. His Internet address is charles\_babcock@cw.com.



# alt.cw

## Obscureware

Command Position Products in Houston has developed the Mouse Surf Board, a rigid plastic surface for true laptop mousing action. The company claims the lap position is more comfortable than hunching over a desktop mouse pad. The Surf Board can be purchased for \$15 at the World Wide Web site of distributor Neutral Products ([www.neuergo.com/surfboard](http://www.neuergo.com/surfboard)).



Phar Lap Software in Cambridge, Mass., has developed the world's smallest Web server. Hook it up to an intelligent device — such as a photocopier, printer, fax machine, security camera or patient monitor — and remote users can control or monitor that device with a Web browser via the Internet or an intranet. As a demonstration, Phar Lap set up a weather station that can be monitored at its Web site ([smallest.pharlap.com](http://smallest.pharlap.com)).

Drop your Newton and the poor thing will find out what gravity really means. So Digital Ocean ([www.digocean.com](http://www.digocean.com)) in Lenexa, Kan., makes a more rugged version of the Apple Newton called the Seahorse, which has a protective yellow rubber boot. The personal digital assistant costs \$1,795 to \$2,395, depending on communications options. It is expected to ship in September.

## Deeptrivia

Who decided to use the @ symbol in Internet E-mail addresses in 1972?

*a* Roy Tomlinson, then an employee of Arpanet contractor Bolt, Beranek & Newman.

What PC was used to break in to the military computer in the 1983 movie *WarGames*?

*a* A Tandy Corp./Radio Shack TRS-80 Model I. It was programmed to make the correct words appear on the screen no matter which keys were pressed.

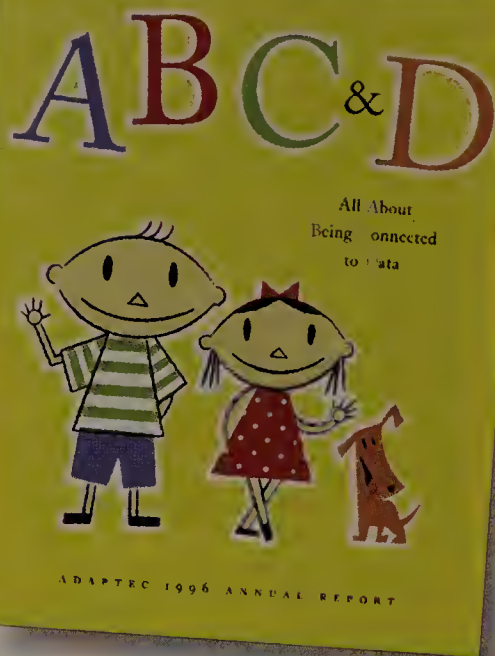
What do the first three initials in SAP AG, the German software company, stand for?

*a* Systems, Applications and Products in Data Processing.

What world leader cowrote a 1976 MIT master's thesis titled "Computerization in the Newspaper Industry"?

*a* Benjamin Netanyahu, prime minister of Israel.

Sources: Elizabeth M. Ferrarini, Arlington, Mass.; The Internet Movie Database Ltd. ([us.imdb.com](http://us.imdb.com)); CIO magazine, Framingham, Mass.; MIT Sloan School of Management, Cambridge, Mass.



Corporate annual reports usually fall into the "my eyes glaze over" category. But Adaptec, a computer peripherals and subsystems company in Milpitas, Calif., took an eye-opening approach this year by explaining its technology in the form of a children's easy-reader book. It tells the story of Wally, who doesn't realize the importance of speedy data links among his PC, peripherals and network. "See Wally hard at work. He tries to scan big photo files. He tries to move video files to his backup drives." Meanwhile, Molly zips through the same tasks. "Molly has an Adaptec host adapter and SCSI peripherals. See Molly multitask."

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## Inside Lines

### Hard times at Ascom Timeplex

Networking giant Ascom Timeplex last week laid off 270 of its employees, or 17% of its worldwide workforce, as part of a broad restructuring that included the exit of president and CEO Randy Phillips. He was replaced by Peter Taylor from Ascom U.K. The Woodcliff Lakes, N.J., company said it is refocusing its efforts on wide-area network switching products and "lessening its focus on inter-networking devices," which it will continue to support.

### MPE users in love

Hewlett-Packard 3000 users who tried to construct the world's largest poster at the recently concluded HP World show in Anaheim, Calif., ran into a last-minute hitch: HP's legal department objected to the group's use of the company's logo. In the end, HP relented, and the football-field-size poster, which featured the words "MPE Users Kick Butt," was successfully assembled out of hundreds of individual pieces of paper on a local field. The users are still waiting to hear from the *Guinness Book of World Records*.

### Testing, testing...

IBM plans to launch a Web site next Monday that will be stuffed full of Internet technologies in the alpha-test stage. The AlphaWorks site will include video and object-oriented software that isn't ready for prime time and the first prerelease version of Java support for Windows 3.1.

### Hell no, we won't go

A division of TransAmerica Corp. recently lost nearly all its 100 programmers when word leaked internally about a pending relocation. Before officials announced their planned move to Dallas, the programming staff quit and immediately found jobs elsewhere in Silicon Valley and the San Francisco Bay Area. The source may have been errant E-mail or unguarded files on a server; either way, the alert spread quickly through the coders' grapevine.

No sooner had America Online fixed its recent outage, then this bit of song parody began circulating on the Web:

To the tune of "American Pie":

A long, long time ago  
I can still remember when I dialed up their help desk lines.  
And I knew if I had the chance  
They could make my modem dance  
with chats and GIFs and silly pickup lines.

But help desk phone calls made me shiver  
with every busy they'd deliver.  
Bad news on the front page  
A 19-hour outage.

I can't remember if I cried  
when I realized Steve Case had lied.  
But something touched me deep inside  
The day the service died.

So bye, bye to Amer'ca Online.  
Drove my modem to a domain, and it's working just fine.  
And good old geeks are cheering users off-line,  
Saying this'll be the day that they die,  
This'll be the day that they die.

We're still online — despite a recent glitch that killed our Internet feed in Framingham, Mass., from Saturday to Monday. Most of our reporters couldn't exchange E-mail with the outside world or visit Web pages. Nynex had fumbled a change in the configuration of our T1 connection to the 'net, a situation our Internet service provider, UUnet Technologies, was slow to apprise us of. Share outage stories and news tips with Computerworld news editor Patricia Keefe at (508) 820-8183 or [patricia\\_keefe@cw.com](mailto:patricia_keefe@cw.com).



# THE FUTURE FOR SOFTWARE DEVELOPERS HAS JUST BEEN UPGRADED FROM HOT TO EXTRA HOT

On March 26th, the world of software development tools got its first taste of the future. Cayenne.

Cayenne Software combines the leadership in data-driven modeling and database design of Bachman Information Systems, Inc. and the leadership in structured and object-oriented modeling resident in Cadre Technologies, Inc. Together, they generated revenues of approximately \$70 million last fiscal year.

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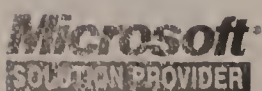
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